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IODIN AS A THERAPEUTIC AID TO SURGERY IN PRIMARY HYPERTHYROIDISM

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CONVINCED by our clinical experience and the discussions in the literature of the value of Lugol's solution as a means of diminishing surgical risk, when administered preoperatively in primary hyperthyroidism, we became interested in determining whether it was this particular solution which was efficacious, or whether other solutions which yielded an equal amount of iodine would produce the same effects. Accordingly, we began, a year and a half ago, to use a solution of iodine in hydriodic acid in a series of cases. Rabinowitz¹ of Montreal suggested the use of the hydriodic acid-iodine solution following experiments upon the avidity of normal and pathological thyroid tissue to exposure to various types of iodine solutions. Tissues treated by exposure to a solution of iodine dissolved in hydriodic acid showed a somewhat greater avidity for iodine than those exposed to Lugol's solution, potassium iodide or watery iodine solution. Fitzgerald², of the same clinic, recently reported the clinical results in a series of cases in which this solution was used. He found, as we did, that the two solutions (Lugol's and iodine-hydriodic acid) produced practically the same diminution in the basal metabolic rate in about the same length of time. Subjective improvement also occurred after practically the same interval.

We have used this solution to date for over 450 patients, and from these have selected 100 consecutive cases for comparison with similar cases in which Lugol's solution had been administered. The results would indicate that the particular solution of iodine used is not important, but that the pre-operative administration of an excess of iodine in some form is most important. The clinical and laboratory effects of iodine pre-operatively and post-operatively, in the two types of solution, were carefully observed in both series, and are reported here.

It is unnecessary to recount the use of iodine in the treatment of diseases of the thyroid during the past. This has been done often and well in historical reviews of the subject. We may, how-

ever, recall that for centuries it has been used in simple goitre; that Neisser early used it in the treatment of exophthalmic goitre; that Kocher noted untoward effects of iodine in certain cases of goitre, probably non-toxic adenomata, and that his subsequent word of caution became almost a condemnation, owing to his wide influence. Thus, for years, iodine was rarely used in cases of exophthalmic goitre. Plummer, in 1922, however, placed its use in this disorder on a clinical basis by presenting a large and carefully studied group which had been benefited by the administration of iodine as a pre-operative measure.

To the researches of Halstead, Marine and Kendall, and to the well-known clinical hypothesis of Plummer with regard to the incompletely iodized molecule of thyroxine, we owe the advances of the day. Yet in spite of the fact that iodine has been used for centuries, and that Plummer has given so excellent a theoretical account of its action, we do not yet *know* the true basis of this action, and dosage has been largely empirical. The most graphic objective illustration we have of the action of iodine is the conversion by its use of a hyperplastic thyroid gland to a resting stage. Marine, in 1908, demonstrated the conversion of a simple hyperplastic thyroid to a colloid gland, following the administration of iodine, and analogous changes in exophthalmic goitre have been shown by Cattell in this Clinic, Reinhoff, and others. In attempting to explain the clinical improvement constantly noted following administration of iodine, we feel that attention should be directed to the structural and more especially to the intrinsic chemical changes which apparently allow the gland to resume its normal secretory activity.

Marine has recently advanced a theory based on the structural changes which occur after iodine administration which may well explain the accompanying clinical improvement. He believes that the rapid accumulation of colloid in the alveolar spaces, which occurs so regularly after iodine feeding, produces so much pressure on the

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thyroid cell that excretion is temporarily blocked. With this lowering of excretion, the basal metabolism falls and clinical improvement occurs. After a time the thyroid cells accommodate themselves to the increased tension, excretion is gradually reestablished and the symptoms of hyperthyroidism recur. This theory would explain many of the phenomena observed during iodine administration; the initial improvement followed by a gradual return of symptoms; the occurrence of marked toxicity in the presence of a definitely involuted gland.

Soon after we began to use iodine pre-operatively in all cases of primary hyperthyroidism in this Clinic, our attention was drawn to the fact that at operation certain glands were peculiarly friable and that the firm, meaty consistency with which we were formerly familiar was replaced by a pale, moist, granular gland which resembled in some respects the glands occupied by a multiple colloid adenoma. Thin fresh sections transmitted light in contrast to the opaque sections of untreated glands. Microscopically the high columnar epithelium of the usual hyperplastic gland was replaced by low cuboidal cells. Papillary ingrowths were greatly diminished. The acini were dilated with colloid. Cattell, in this Clinic, made a careful study of these microscopic changes and found that they were fairly constant after iodine feeding. Beginning involution was seen as early as four days after beginning the administration of the drug. Marine has noted beginning involution in hyperplastic glands of dogs in a similar period after iodine administration. Cattell next began a study of the relationship of these involutionary changes to the iodine content of the gland. He found, from a study of 168 surgical specimens removed in this Clinic from patients with primary hyperthyroidism, that the iodine content varied with the degree of involution. It has been known for years that in abnormal glands, the more epithelial hyperplasia, the less iodine is present. The degrees of variation in iodine content of a series of glands from patients suffering from primary hyperthyroidism are shown in Table I (Cattell):

TABLE I

	No. glands	Average	Mg. iodine per gram dried gland	
			High	Low
Very hyperplastic	16	0.57	0.8	0.279
Hyperplastic	17	1.0	1.3	0.8
Early involution	29	1.6	2.9	1.1
Moderate involution	24	2.4	4.3	1.2
Advanced involution	19	3.2	4.6	1.8
Marked involution	18	4.7	7.9	3.0
Complete involution	10	6.1	8.4	3.5

In primary hyperthyroidism the iodine content of the thyroid gland is distinctly reduced. The content of a normal gland has been shown by various observers to be approximately 2 mg. per

gm. of dried gland. In primary hyperthyroidism it may be as low as 0.279 mg., but with complete involution following iodine therapy, it may rise to 8.4 mg. per gm. of dried gland. In this Clinic approximately 87 per cent of the patients with exophthalmic goitre, who have received iodine therapy, have definite changes in glandular structure, with involution and increase in iodine content. The latter tends to be in direct proportion to the degree of involution.

From pathologic examinations of specimens removed from patients with exophthalmic goitre who have been treated pre-operatively with hydriodic acid-iodine solution, it is evident that the microscopic changes are similar to those demonstrated by Cattell after Lugol's solution had been administered. The pathologist is unable to detect any difference between the involution brought on by Lugol's solution and that produced by administration of the hydriodic acid-iodine solution. Estimations of iodine content of a small number of glands following treatment with hydriodic acid-iodine solution have shown practically the same values as Cattell found following treatment with Lugol's solution.

DOSAGE

In an attempt to determine more accurately the ideal dosage of iodine, Cattell studied not only the absorption, but the excretion of the drug. With administration of 30 minims of Lugol's solution (single dose—) 250 mg. of iodine, 60 to 80 per cent of the iodine was found to be excreted in the urine in the first twenty-four hours, with traces persisting for several days. He concluded, therefore, that the usual dosage of 10 drops of Lugol's solution three times daily is too large. Marine, Neisser, Lowey and Zondek had used smaller amounts with favorable effects. In the light of these findings, we used for a time a smaller dosage adjusted to the individual, but the clinical results were not so satisfactory as with the larger doses, and we, therefore, returned to the latter. Theoretically, it is doubtless true that the administration of 10 drops of Lugol's solution three times a day is too large a dose; but clinically it has been our experience repeatedly that the metabolism will not drop as quickly, nor will the patient's general condition improve so much on long continued smaller amounts as when excessive amounts are administered in a short time. Dr. Lahey has suggested that while a considerable part of the iodine is not retained in the gland and is excreted in the urine, nevertheless, some of the excreted iodine may have played a part in cellular conversion. The fact that a large part of the administered iodine is found in the urine is no proof that it is not of value in stimulating involution. Hence we accept the need for an excess of iodine as a fact which we cannot yet accurately account for.

We have no evidence that such an excess is dangerous to the human organism.

The dosage of Lugol's solution* used in the series reported here was 30 minims daily. The dosage of the hydriodic acid-iodine solution† was 60 minims daily. Careful chemical analysis of the amount of iodine present in each of the two solutions was performed in the chemical laboratory of the New England Deaconess Hospital. Thirty minims of Lugol's solution were found to contain 192 mg., rather less than the theoretical iodine content. Sixty minims of the hydriodic acid solution contained 256 mg. of iodine, considerably less than its theoretical yield. Accordingly it will be seen that those patients receiving the hydriodic acid-iodine solution received a somewhat greater daily dose of iodine than those to whom Lugol's solution was administered.

*Lugol's Solution:

Iodine	Gr. xx
Pot. Iodide	Gr. xxx
Aq. Ad	1 ounce

Each minim contains 5.79 mgm. of available iodine.

†Hydriodic Acid-Iodine Sol. (Fitzgerald):

Hydriodic acid dil (USP) 10.2%, saturated for 24* with crystals of resublimated iodine; filter; dilute with water until 1 cc. contains 100 mgm. iodine.

SELECTION OF CASES FOR DISCUSSION

The cases on which the following discussion is based were all cases of primary hyperthyroidism. Pathological examination of all tissue removed at operation showed the epithelial hyperplasia associated with exophthalmic goitre. All were carefully followed with basal metabolic studies before and after operation. Before operation, a determination of the basal metabolic rate was made every other day. After operation, the rate was determined on the sixth day. For six to eight days prior to operation the patients were kept in bed in the hospital, with the exception of a few less severely toxic cases, who were given lavatory privileges. Fluids were given as freely as possible, and every patient urged to eat; extra meals were given whenever the patient desired them. All cases were treated in either the New England Deaconess or the New England Baptist Hospitals, and accordingly received a very similar type of nursing care. This constancy of factors lends reliability to the observations made.

CLINICAL EFFECTS OF IODINE

Clinically we have found iodine to be of value in exophthalmic goitre in four ways:

1. As preparation for operation in all cases.
2. As a means of controlling pre-operative and post-operative crises.
3. Post-operatively (after leaving the hospital), as a prophylactic measure against recurring hyperplasia.
4. As a successful palliative measure in cer-

tain cases of persistent and recurrent hyperthyroidism following operation.

Improvement in subjective symptoms when iodine is used in preparation for operation is striking. Restlessness and nervousness rapidly disappear; shakiness and tremor decrease. Although tremor rarely disappears altogether, it is usually so distinctly diminished that patients notice the difference in handwriting, in handling cups, etc. In a small but definite proportion of cases the exophthalmos recedes. Unfortunately this does not always happen and frequently patients with the most extreme exophthalmos have no appreciable improvement from iodine. Whether or not this occurs, however, the startled frightened look or typical stare of exophthalmic goitre quickly disappears in the majority of cases. The pulse rate has a general tendency to drop during the pre-operative iodine regime and serves as an index of the susceptibility of the patient to improvement from iodine. There are certain cases which never show this slowing of the pulse rate with iodine (Chart 5) and never reach a normal metabolic state until a subtotal thyroidectomy has been completed.

The sensation of heat is diminished under iodine. Perspiration is markedly lessened. Many patients have a ravenous appetite with hyperthyroidism. This may diminish after taking iodine to become normal as their high metabolism falls. Others enter with marked anorexia, amounting to distaste for food and note a return of appetite after taking iodine. We have at present, however, one patient extremely ill with exophthalmic goitre who requires forced feeding with nasal tubes. Iodine has failed absolutely to improve her nervousness, her tachycardia, her appetite, or her metabolism in any way.

It must be recognized that in a definite group of patients—possibly 12 per cent—iodine has no apparent effects on the symptoms of the disease. Iodine cannot be regarded as a drug which never fails to help the exophthalmic goitre patient, as so many men appear to believe.

In the cases of long-standing hyperthyroidism with pigmentation of the skin to an extent that it resembles tanning from sunburn, the skin tends to assume a more normal tint as iodine is given. This has been noted particularly in patients who have taken iodine for several weeks before operation.

In our patients, when favorable clinical effects occurred at all, they were noted in the average case very regularly on either the fourth or fifth day after the beginning of iodine administration. Improvement was progressive until the eighth to twelfth day, when the optimal clinical effect appeared to have been reached. At this time operation was performed. The clinical improvement did not parallel the change in the basal metabolic rate, which usually did not

reach its lowest point until eight or twelve days after iodine feeding was begun. No appreciable improvement after careful iodine preparation could be noted in eight of the one hundred cases, which practically parallels the failures in the patients treated with Lugol's solution (7.2 per cent).

On palpation a change is noticeable in the size and structure of the hyperplastic thyroid after iodine has been given in large doses. The gland becomes smaller, firmer, more resistant and less vascular. The firm, regular contour is replaced by a granular, almost nodular, surface as elicited by the examining finger. Bruits are less loud or disappear. These changes are most marked in patients who have taken iodine over long periods of time. However, they may occur in ten or fourteen days.

One of the most dreaded manifestations of hyperthyroidism is the occurrence of so-called gastrointestinal crises or thyroid storms. These are marked by an exacerbation of all the symptoms of the disease, with the addition of obstinate diarrhoea and vomiting, often accompanied by delirium which may rapidly progress to coma and death. The occurrence of a gastrointestinal crisis denotes a most critical point in the course of the disease and demands immediate attention. It is in such a situation that iodine has shown its most dramatic results. It must be given in large amounts and as quickly as possible. The patient must be saturated with iodine in as short a time as it can be safely administered. In these extreme cases we administer 100 minims of Lugol's solution in the first twenty-four hours. This, together with intravenous glucose and large amounts of fluid, usually arrests the crisis to such an extent that on the following day the usual dose of 30 minims of Lugol's solution may be reestablished. The iodine is first given by mouth; if the patient cannot retain it in this manner, it is given by rectum. If this also is not retained, it may be given intravenously as a solution of sodium iodide.

The use of iodine as a pre-operative measure alone does not suffice to protect the patient against the occurrence of the violent post-operative reactions that have for so long been the dread of thyroid surgery. It is our custom to double the dosage of iodine during the twenty-four hours immediately preceding operation and the forty-eight hours immediately following operation. The pre-operative dosage is resumed on the second day after operation and is continued throughout the patient's stay in the hospital.

We are convinced that the pre-operative use of iodine does not insure the patient against post-operative reaction. Indeed, iodine may mask the true severity of the illness in severely toxic cases. As in the period which preceded the use of iodine in thyroid surgery, the operation must

be graded. It is our experience that post-operative thyroid storm with a fatal termination may occur in spite of iodine, a partial operation and the greatest conservatism.

The limits of iodine must be recognized and one must always remember the possibility of a post-operative storm no matter how great the subjective improvement or how marked the pre-operative drop in basal rate. Our experience has taught us that each case must be considered individually. We must bear in mind the patient's condition just prior to admission to the hospital and the course the disease has taken. Its chronicity, the occurrence of crises, the marked loss of weight, cardiac damage—all these factors must be weighed in the estimation of the patient's ability to withstand operation. On the basis of these considerations and bearing in mind the fact that a few weeks of iodine administration cannot wipe out the damage of months or years of thyroid toxicity, the extent of the operative procedure in each patient must be determined. It is obvious from the foregoing that multiple stage operations cannot be entirely eliminated by iodine therapy.

When the patient leaves the hospital, if the operation has been one of a multiple stage procedure and he is to return in six weeks for completion of the operation, ten drops of Lugol's solution every day during the interval are prescribed. We have found that if this is not done, the metabolic rate will rise, and when the patient returns for the second half of the operation the usual iodine effect will not be obtained.

After the complete operation has been done, whether in one or several stages, patients are given ten drops of Lugol's solution once a week. We have not as yet determined just how long post-operatively this therapeutic measure should be continued, but at present advise it for three months, at which time the patient comes back for the first check-up determination of the metabolic rate. If the condition at that time shows satisfactory improvement, the drug is stopped. Otherwise it is continued. Occasionally the dosage is increased. Halstead in 1896 demonstrated that after partial thyroidectomy in experimental dogs, compensatory hyperplasia occurred. Marine⁵, in repeating these experiments, found that this hyperplasia did not begin until the iodine store in the remaining portion had fallen to below 0.1 per cent. The degree of compensatory hyperplasia increased proportionately as the iodine store decreased. However when traces of iodine were given following operation no compensatory hyperplasia occurred in animals in which as much as three-fourths of the gland had been removed. In animals with more than three-fourths of the gland removed, however, compensatory hyperplasia took place. He has shown in other experiments that when the

iodin store in the thyroid gland falls below 0.1 per cent, hypertrophy and hyperplasia usually occur. Because of these facts we give small doses of iodine post-operatively, in the belief that we may thereby prevent hyperplasia of the portion of thyroid gland which remains after subtotal thyroidectomy.

THE USE OF IODIN IN THE TREATMENT OF RECURRENT OR PERSISTENT HYPERTHYROIDISM

The use of iodine in the treatment of recurrent or persistent hyperthyroidism after thyroidectomy is of demonstrated value. Early in our experience we considered that iodine in these cases controlled symptoms but temporarily, and that permanent relief was not secured; that

day is followed by the appearance of nervousness, tremor, rapid and at times irregular heart action. For the past fifteen months he has worked daily and felt well with ten drops of Lugol's solution per day.

There are two other patients who have reacted in a manner similar to this. One of these, W., we have seen repeatedly, with serious congestive heart failure and with symptoms of marked hyperthyroidism. Each of these attacks has followed excessive alcoholic indulgence and the omission of iodine. Each has been controlled completely by resuming the administration of iodine.

This type of persistent thyroidism is, however, rare. As a general rule, cases of recurrent hy-

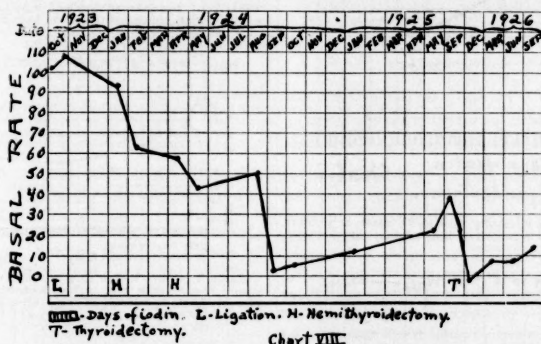


CHART 8. D. M. Male—age 50—severe primary hyperthyroidism and heart failure. After pole ligation and subtotal thyroidectomy in two stages, the basal rate fell—but not to normal. Lugol's Solution produced only temporary normalcy; and even after the removal of further thyroid tissue, unless the regular administration of iodine is continued, unfavorable symptoms still reappear.

ultimate recovery in a case of persistent or recurrent hyperthyroidism demanded the further removal of thyroid tissue. We believed that when the basal metabolic rate was persistently elevated following thyroidectomy, too large a remnant of active thyroid tissue remained.

For the most part, we still hold to these opinions and find that in the majority of cases, further operation is necessary to relieve the persistent hyperthyroidism. Within the past year, however, we have had three patients of this type whose unfavorable symptoms have persisted in spite of repeated removal of thyroid tissue and have been controlled only by the continuous administration of iodine.

Chart 8, D.M., is the basal metabolic record of one such patient followed by us for over three years. He has had repeated removals of thyroid tissue which have finally resulted in maintaining his basal rate at normal for the past year. It is necessary, however, for him to take from six to ten drops of iodine daily if he is to feel well. He finds that less than six drops per

perthyroidism should have a second operation and the thyroid remnant further reduced. Whether hypertrophy of the remnant left at operation has occurred, or an insufficient amount was removed at the original operation is, of course, an unsettled question.

LABORATORY DATA—BASAL METABOLIC RATE

The effect of iodine in reducing the abnormally high basal metabolic rate in primary hyperthyroidism is marked in the majority of cases. No essential difference in this respect was noted between the effect of Lugol's solution and that of hydriodic acid-iodine solution. It was our clinical impression that the drop in basal metabolic rate occurred earlier with the latter solution, but this impression is not borne out by our laboratory data.

In a series of 69 patients selected from 250 who had received Lugol's solution, we found that the average basal metabolic rate on admission to the hospital was +77 per cent. After rest in bed and the administration of Lugol's

solution for approximately eight days, it fell to +47, a drop of 30 points. For the group of one hundred cases receiving the hydriodic acid-iodin solution, the average basal metabolic rate at entrance was +65, and the average rate after eight days of rest and iodine therapy, +38, a drop of 27 points.

The curves which were plotted for the fall in basal metabolic rate after rest in bed, treatment

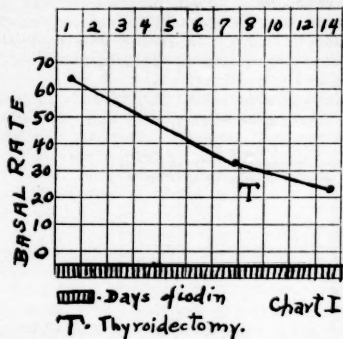


CHART 1. The average metabolic rate in 44 cases of primary hyperthyroidism treated with rest in bed, subtotal thyroidectomy in one stage and Lugol's Solution.

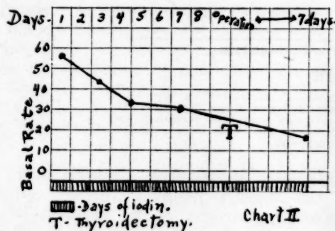


CHART 2. The average basal metabolic rate of 64 patients treated with rest in bed, subtotal thyroidectomy in one stage and hydriodic acid-iodin solution.

with Lugol's solution, and thyroidectomy in one stage were almost identical with curves plotted for patients who received hydriodic acid-iodin solution prior to a one-stage thyroidectomy (Charts 1 and 2). Again, the curve for patients undergoing thyroidectomy in two stages (each a hemi-thyroidectomy) following treatment with Lugol's solution is quite similar to that for patients who had a two-stage operation, but received the hydriodic acid-iodin solution (Charts 3 and 4). There is noted in each case a slight rise in rate occurring during the six weeks interval between operations, and a final fall in rate to a point at or near normal after the second operation.

In our study of the effects of Lugol's solution in exophthalmic goitre, we found that five pa-

tients out of sixty-nine (7.2 per cent) failed to show the usual, or a satisfactory drop in basal metabolic rate after taking the solution. Of one hundred patients who were given the hydriodic acid-iodin solution in the present series, eight (8 per cent) showed either no improvement in metabolic rate, or a slight rise. Chart 5 illus-

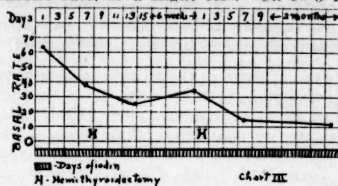


CHART 3. The average metabolic rate in 11 cases of primary hyperthyroidism treated with rest in bed, subtotal thyroidectomy in two stages, each a hemithyroidectomy, and Lugol's Solution.

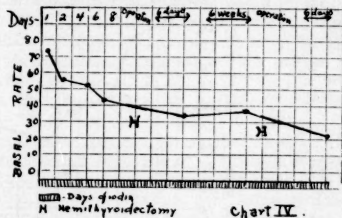


CHART 4. The average drop in basal metabolic rate in 36 patients treated with rest in bed, hydriodic acid-iodin solution and subtotal thyroidectomy in two stages, each a hemithyroidectomy.

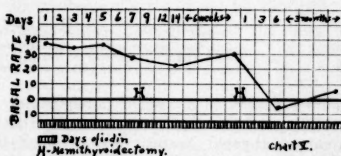


CHART 5. The course of the basal metabolism in a patient very ill with primary hyperthyroidism. Note that the administration of iodine had little or no effect upon the basal metabolic rate. Not until the second hemithyroidectomy had been performed did the basal metabolic rate approach normal. With this drop to normal, came clinical improvement.

trates such a case. Nevertheless in this case the rate fell to normal immediately after operation and was still normal three months later. From the foregoing comparison it is obvious that with Lugol's solution and with the hydriodic acid-iodin solution, almost exactly the same percentage of patients have no drop in their metabolism with iodine feeding.

In certain cases the administration of hydriodic acid-iodin solution will bring about a remission of symptoms, and a fall of the basal metabolic rate to normal, or nearly so, as has previously been noted in cases treated with Lugol's solution. In others, there may be a distinct clinical improvement, but little or no change in

basal metabolic rate. On the other hand, there may be marked diminution of basal metabolic rate, and little if any change in subjective symptoms. This was likewise true of Lugol's solution.

Charts 6 and 7 represent the changes in basal metabolic rate in two severe cases of primary hyperthyroidism, the first treated with Lugol's

ment. Failure to resort to surgery, no matter how great the apparent remission of symptoms of primary hyperthyroidism, results in failure to cure the patient.

IODIN IN ADENOMATOUS GOITRE

The question as to whether iodine should be given to patients with adenomatous goitre is of

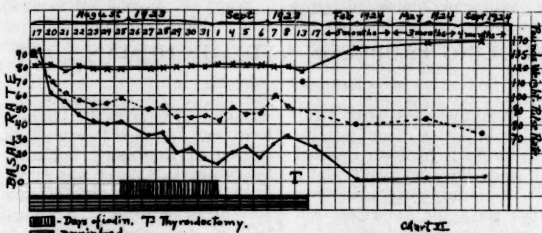


CHART 6. The course of the basal metabolic rate, pulse rate and weight in a girl of 18 with severe primary hyperthyroidism followed for over a year after the beginning of treatment. Note the definite drop in basal metabolic rate and pulse rate occasioned by rest in bed alone. Note the further improvement when iodine was given, the loss of improvement when iodine was stopped, the final cure following subtotal thyroidectomy.

solution, and the second with hydriodic acid-iodine solution. Again the similarity in the curves is striking.

These laboratory data therefore corroborate the clinical finding that the type of solution of iodine used is not important, but that iodine in

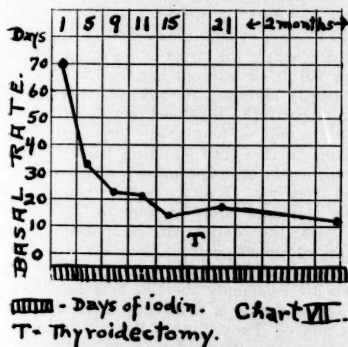


CHART 7. A basal metabolism chart of a patient with primary hyperthyroidism treated with rest in bed, hydriodic acid-iodine solution and a one-stage thyroidectomy. Note the large initial drop followed by slow fall to normal.

some form and in the dosage indicated is of marked value in the preparation of exophthalmic goitre patients for operation.

IODIN WITHOUT OPERATION INEFFECTIVE

When large amounts of iodine have been given for several days previous to operation with resulting improvement in basal metabolic rate and diminution in toxic symptoms, operation must be performed at the time of maximum improve-

ment. Failure to resort to surgery, no matter how great the apparent remission of symptoms of primary hyperthyroidism, results in failure to cure the patient.

particular interest at this time, in view of the fact that certain thyroid clinics give it to all cases of adenomatous goitre with secondary hyperthyroidism, and others do not. We do not believe that iodine should be given as a routine to patients with adenomatous goitre. Indeed, we are convinced that patients with large single adenomata with secondary hyperthyroidism may become more toxic if iodine is administered. We have also seen non-toxic adenomata become toxic after long continued iodine feeding.

On the other hand, there are multiple adenomatous goitres (so called) which apparently represent degenerated involuted hyperplastic glands, which do well with iodine. Certain cases of hyperplasia with a coincident adenoma do well under iodine treatment. Clinically, we are impressed with the fact that if the patient improves with iodine, hyperplasia must be present in the gland and it is often very difficult to differentiate an old hyperplastic gland with marked involution from a multiple adenomatous gland. In multiple adenomatous goitres with hyperthyroidism, iodine may be cautiously tried.

SUMMARY

1. Comparison of the findings in one hundred cases of primary hyperthyroidism in which iodine was administered pre-operatively and post-operatively as hydriodic acid saturated with iodine, with the findings in similar cases treated with Lugol's solution, shows almost identical effects from both the clinical and the laboratory point of view.
2. Iodine is the important factor, not the solution in which it is administered.
3. An excess of iodine is preferable to long-continued smaller doses.

4. Continuation of the iodine therapy for at least three months post-operatively is desirable.

5. In most instances, recurrence of hyperthyroidism after operation indicates that more of the thyroid gland should be removed. In certain cases, however, the recurrence of toxic symptoms may be controlled by iodine.

6. Iodine alone does not cure exophthalmic goitre.

7. Iodine may be cautiously tried in the pre-operative preparation of patients having multiple adenomatous goitres with hyperthyroidism.

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SHOEING PROBLEMS AND THE HUMAN FOOT

BY CHARLES F. PAINTER, M.D.

AMERICAN shoe manufacturers are justly proud of the marketability of their product. Their cleverness has spread beyond our own borders and American-made shoes may be found in all European cities. Manufacturers, however, must produce in these days, for American trade at least, shoes to satisfy a demand created by stylists who are constantly at work designing models which ignore altogether the primary objects of providing a cover and protection for the human foot. So rapid are these changes brought about that almost before a factory has adjusted itself to the production of one variety, it must change over its entire equipment in order to be prepared for a wholly different model. Not a few shops have met financial ruin through inability to keep pace with these changes and of course the cost to the customer has to include the manufacturers' and retailers' losses in meeting these rapid style changes. Inasmuch as the alteration of these models has for its object the production of something which depends for its salability on the novelty of its appearance, those who wear them make no effort to protect them from the ravages of mud and rain, for to do so would hide them from view, and their construction is a good deal like much modern residential development—built to last only until business has crowded dwellings out of the locality, or in the case of the shoe, until the next style comes on the market.

Shoe salesmanship is primarily concerned with disposing of the stock on the shelves. It is the stylist's job to create a vogue which is so striking that the retail trade can ill afford not to stock up with the latest product of their art. It is easy to see that, as there are no stylists engaged in planning evolutionary changes in the types of the human foot, a vast majority of the new models of shoes being gotten out for the shoe trade cannot fail to be harmful in varying degree. Shoes for women are, of course, the chief offenders. Stylists in women's clothes have introduced, in recent years, two fashions which have apparently come to stay, viz.: the shorter skirt and the boneless corset. These modifications are sane, healthful, and neither unbecoming nor immodest, when not overdone. It would seem that the period which could produce these

sensible correctives to feminine attire might have been expected to extend its activities to the subject of improving feminine footwear. On the contrary, it never was worse and is constantly changing, health and foot comfort being menaced in the meantime. The thought of preservation of the modern girl's footwear by the protection of a rubber in the rain or mud is abhorrent, just as the use of an umbrella to prevent the spoiling of hats and gowns seems equally unthinkable. The expense of renewals to the head of the household does not figure in the minds of the wearers of modern clothes and shoes. It is probably, therefore, futile to talk about selling a shoe product that furnishes appropriate foot protection for the various purposes for which the foot needs protection. The modern woman, when she goes in for sports, houses her feet in suitable footwear, but she would disdain to wear shoes of that shape if she were dressed for the street or for social activities, either within or without her home. She would vehemently maintain the position that she must have for comfort a high heel to walk in, but when she plays golf or tennis, she forgets that she is walking further and standing longer than the average social or shopping expedition would demand from her. Every now and then some shoe dealer starts an effort to cater to this long felt want, viz: the proper, anatomic shoeing of the people who must perforce wear shoes because of the climate to which they are exposed. Their efforts are commonly abortive because what they are really doing is deceiving themselves as to their motive. They think it is humanitarian and that they are participating in a great social movement for the uplift of the race. The real incentive is commercial, thinking to secure more than their share of the trade by catering to the public through a popular "trade-name" or by a "slogan." A certain amount of knowledge of human anatomy is essential to meet the varying requirements of the human foot for boots and shoes, but no more than any reasonably intelligent person might acquire from a very short apprenticeship in shoe salesmanship. One of the superstitions which seems to have had wide dissemination is that "short shoes," meaning by that shoes that allow the toes to extend fully up

to the end of the box on the toe cap, are responsible for most of the ills to which the foot is liable. No one would wear such a shoe long enough to do any harm other than produce a corn or a callus. There is, however, such a thing as a foot that is too long for a ready-made shoe and it is from a failure to recognize this that many of the troubles arise that are directly ascribable to faulty shoeing. These misfits are caused by anatomic variations in the size of the bones of the tarsus, metatarsus or phalanges. These may occur without altering the over-all length of the foot or causing it to depart from the standard ready-made shoe sizes. As a result of such variation the joints between metatarsal (first) and phalanx come in the wrong place in the stock pattern shoe, causing hallux rigidus and hallux valgus, two of the most uncomfortable deformities or disabilities of the foot. Few shoe salesmen know this, and I have patients who have bought their shoes for years from the same salesman, in the same store, and all the time he was allowing his customer to develop a permanent osseous deformity. The common remedy that the salesman has to offer to those in whom this condition has developed to a point where it begins to be troublesome is stretching the shoe over the painful joint; rarely does he suggest fitting a shoe with a shorter vamp. There are from about three to five per cent of individuals who have a custom-made foot and ought not to try to wear a ready-made shoe.

The anatomical variations of the human foot should be known to those whose business it is to fit shoes. Then comes the catering, done in so many shoe stores, to the customer's suggestion that he may have "flat foot." It is to be feared that in some stores this suggestion is supplied to the patient gratuitously in order to sell him a pair of special shoes or support to wear in the shoes. The lay public has a crude idea of what "flat foot" is. They think, and in this thought they are often aided and abetted by shoe salesmen, that flat foot is an objective condition; that if one is flat footed to look at, he must have the symptoms and, *per contra*, if he has symptoms even with a high instep he is not "flat footed." Both such suppositions are erroneous. The high arched feet are often the more painful, whereas the low arched ones may have no symptoms whatsoever, and yet the latter frequently are fitted out with plates in the shoe stores. The acutely painful feet, marking the initial symptoms in those who later on might be classed among the "flat footed," ought not to be given supports of any sort to wear in their shoes. That is the golden opportunity to direct them to a regimen that will, in the great majority of cases, permanently set them on the right track to avoid *bone fide* flat foot and prevent their acquiring the pernicious habit of plate wearing.

The contributory causes for "flat foot" are not sufficiently understood and because there is

a so wide-spread, popular knowledge of the existence of such a condition and because shoe stores, department stores, drug stores and possibly others, volunteer to provide treatment for this condition, of which they have a very nebulous idea, a good deal of inconvenience, loss of time, and occasionally actual harm results from irrational methods of treatment. Working conditions, anatomical peculiarities, general health, excess of weight, hereditary predisposition, racial peculiarities, opportunities for physical exercise and nature of the work in which the patient was engaged at the time of commencement of symptoms and previously—all these factors, aside from the physical signs and symptoms, must needs be considered in reaching a diagnosis or suggesting treatment. Of course, all this is not essential to go into in detail in every case, but one skilled in sizing up such conditions knows what lead to follow. Backache and pain in the knee, the laity know, may be caused by flat foot and the shoe dealer knows it too and many are the plates I have seen patients wearing which have been prescribed for back ache and pain referred to the inner femoral condyle, sometimes with benefit, more often without. Bad as it is to venture on the treatment of "flat foot" on the part of the shoe salesman and the drug clerk, it is even worse when the anterior arch is concerned, for there is even less chance of an anterior arch pad, of the stock pattern type, fitting in the right place, even supposing the need for it exists, than is the case with the longitudinal arch. The plates for this arch, ready for sale, are usually leather and push the sole of the shoe down in a very short time so that any pressure they might exert, if in the right place and of the right height, could not be effective for long. The same thing is true of the leather and pneumatic supports for the longitudinal arch. Supports, so many of which are made for the shoe store and surgical supply-house trade, are manufactured from non-temperable material and few of them can stand up under the body weight. Any support which one can bend in the hands, as may be done with the composition metal arches, can be of little service in maintaining the arch of the foot. When one realizes that included in the popular notion of what constitutes flat foot are the symptoms that go with bony spurs on the bottom of the heels, certain of the anomalies in development of the tarsus, inflammations of the bursae that are normally located in the feet and occasionally irritated, and the low grade arthritic troubles which manifest themselves in this locality, one can understand why it is that some technical experience is needed before one is entitled to prescribe treatment for "flat foot."

The shoeing problem involves a consideration of (1) the normal foot under normal conditions; (2) the anomalous foot under all conditions and (3) the normal foot upon which some pathology

has been grafted. The normal foot is hard to define for it is capable of considerable variation and still function with entire satisfaction. It should be flexible with a free range of motion in flexion and extension, abduction and adduction, inversion and eversion; there should be no callosities on it; the weight of the body should pass down the mid-plane of the lower extremity and meet at right angles a line passing through the foot from front to back, emerging, in front, through the cleft between the first and second toes and in the back mid-way between the outer and inner borders of the heel. There should be no deviation of the great toes away from the median line, no contracture of the toes, and no corns or papillomata. The front of the foot should on the dorsal aspect be slightly convex at the level of the metatarsal heads.

The apparent height of the longitudinal arch is of no significance, neither is the tracing of the wet foot upon the floor unless there are symptoms that are significant associated with it. For such a foot, belonging to man or woman, the inside line of the shoe when put along side a straight edge should touch throughout the depth of the heel and for all but perhaps the last inch of the sole, and that should only slightly depart from this line. The vamp should be fully a half inch to five-eighths or three-quarters of an inch back of the great toe joint. The shank should not be too narrow, but there should be sufficient "cut in" behind the ball of the great toe so that the leather from this point back opposes pressure against the inner border of the foot along the whole of the arch, back to the heel when weight is borne. The greatest thickness of the instep should be where there is the greatest up and down diameter to the shoe. The height of the heel should be determined by the degree of approximation of the dorsiflexion of the foot to the normal. Individuals differ as to the amount they require in height for their comfort. No one needs, or should be allowed, the "French heel." The "Cuban" heel is proper for many. Too deep a "box" for the toes is undesirable and there should be two inches of unstitched leather between the posterior edge of the box and the juncture of vamp and upper at the lacing. An Oxford is best for man or woman and not the Blucher style. Ornamental stitching should be avoided. There is no object in "hooking in" the front of the shoe and too flexible a shank is undesirable. The shoe with a "welt" is preferable and the thickness of the sole of a work-a-day shoe should not be less than three-eighths of an inch to a quarter of an inch. The heel should be fitted as well as the sole and the height of the counter must not be too great.

Most of the attempts that shoe manufacturers have made, directly through the suggestion of physicians as well as through the intermediary of retail dealers, have promised well and in a few instances have, for a time, worked well, but

in the long run (and not so very long at that) fashion or business necessity have gained the ascendancy over humanitarian and professional suggestions and what purported to be an effort to relieve and prevent foot troubles succumbed to commercial dictum. "Stiffened shanks," "flexible shanks," "Nature shapes," "cushion heels" (referring to a narrow rubber inlay in the outer side of the heel), "Thomas heels," merely to mention a very few of the shoes advertised to catch the eye of those who think they have some problem in getting properly shod, seek to satisfy any theory that the purchaser may have as to the way to prevent or cure troubles with the feet. Under certain circumstances the above may be the answer to certain peoples' difficulties but it is only by change that they do, for they are rarely supplied with any degree of discrimination.

To put a shankless shoe upon a confirmed sufferer from real "flat foot" is generally ineffective. The "ground gripper" shoe is theoretically sound but should be limited in its use to symptomless feet as a rule. On the other hand, the "built in" arches are rarely effective in the treatment of true flat foot for the reason that the support does not often come in the right place. Pronated feet, i.e., those in which the weight is borne too far to the inner side of the long axis of the foot, are seldom relieved by the "cushion heel" shoe to which reference was made above. This difficulty can only be satisfactorily met in a shoe by one having a lift on the inner border of the heel and possibly the sole as well. Children's shoes are on the market in far better styles than are those for adults, particularly for adult women.

For the normal foot (male or female) these general specifications furnish a basis for the fitting of shoes. One must always have in mind that no two feet are just alike, not even in the same individual, oftentimes. The abnormalities that are most troublesome are those caused by unusual thinness of the heel which most frequently is associated with abnormal length. There are no combinations of size in the ready-made shoes that can accurately meet this condition. Fitting the length and the anterior width, at the same time filling in the sides of the heel with felt, is about all one may do. A second abnormality is a tendency of the foot to roll in, so that the inner ankle is unduly prominent, a condition known as pronation; this is unpleasant to look at and is oftentimes associated with symptoms of leg ache and pain and tenderness in the foot. Knee strain and even backache, in asthenic individuals, may result from this. If allowed to continue too long, secondary troubles arise in the fore foot, e. g., an undue prominence of the juncture of the internal cuneiform and the scaphoid. This condition is more liable to occur in persons whose arches are unusually high and this juncture is at the apex of the arch of the

foot. Rolling the foot inward tends to sprain this joint and it becomes more than usually prominent, is chafed by the shoe, largely because the eyelets of Oxfords lie directly over it, in this type of foot. The consequence is that this place becomes chafed and sometimes a bursa or a ganglion forms near it or over it. In addition to this a hard callus is apt to develop along the inner side of the great toe where it makes its contact with the shoe. A corresponding place on the inner side of the heel also frequently becomes calloused. The remedy for this, which is generally effective, is the building up of the inner margin of the heel so that it is from one-eighth of an inch to three-eighths of an inch higher on this border than it is on the outer border. This changes the "stance," shifts the line of weight-bearing to the normal and improves the appearance, as well as relieves symptoms and in the bad cases prevents the uneven wearing-out of the shoes and their distortion. Callosities and corns are an almost constant accompaniment of this static defect and usually disappear after this correction has been made. The plates which are frequently prescribed for this condition in the shoe stores have very little effect upon pronation.

The anomalous foot is of not uncommon occurrence and its most frequent type is the one with bunions or rigidity of the great toe joint. Both of these are the result of shoeing defects and in their incipency readily correctable as has been pointed out in detail above. Another anomaly for which shoe dealers feel called upon to prescribe is the supernumerary bone that a few feet have on their inner aspect. Following a sprain this bone, which is an "extra," developed in a tendon where this is inserted into one of the normal bones of the foot, becomes unduly prominent and pain is referred to it which is often erroneously accepted as evidence of "flat foot." A similar situation occasionally develops beneath the ball of the great toe, though this is not so commonly confounded with arch troubles and is not, therefore, so frequently prescribed for by the department-store salesman in the shoe trade.

A more common mistake is the prescribing of plates for the normal foot upon which have been grafted pathology of some kind, such as chronic arthritis or acute inflammatory lesions following focal infections. Treatment for this sort of thing, though it may not do harm except perhaps by undue delay in getting started with appropriate treatment, does no good either symptomatically or otherwise, unless associated with specific treatment. There is no special problem that youth has in the fitting of shoes which may not be met with in the adult, or vice versa, and the same general considerations should guide one. Except for individuals who have relatively short heel cords (and this is not appreciated as a rule until adolescence has been pretty well established), low heels should be encouraged. For

one thing, those upon whom these can be kept during adolescence will not so frequently persuade themselves, later on, that they can not walk on a low heel. The high heel is a contributory factor to the breaking down of the anterior arch and the formation of calluses beneath the anterior arches, and very likely to some extent to the enlargement of the joints at the big and little toes where the shoes narrow too rapidly from this joint forward. Bunions are so much more common among women that it is reasonable to think that mechanical factors not so commonly present in men's shoes may have something to do with the increased frequency of their occurrence in women. Though there have been numerous attempts to connect infections with the development of papillomata or seed warts, on the sole of the foot, especially since there seems to be an epidemic character to the trouble at times, I have never been able to see the logic of those who make such claims and because so many more "seed warts" occur on the front of the foot than anywhere else, it seems to me that the abnormal distribution of weight upon the ball of the foot in the high-heel wearers may be a potent factor in the incidence of these growths in young girls' feet, for they are rarely seen in men, or women beyond the high-heel age.

It will be observed from what has been said that it is from among women that the greatest amount of foot troubles are derived. Children's shoes up to the age of 10-12 are uniformly sensible, well designed and constructed. Men's shoes also are less subject to fashion's whim, and though one occasionally observes a style that was evidently dictated by a desire to get away from conventional lines, yet rarely is this true to such an extent as to sacrifice any essential of sensible footwear. Men doubtless would not stand for it; anyway, but a far more probable explanation is that conventional women's dress furnishes more incentive for their exploitation. The short skirt, opening up greater opportunity for hose display, provides extraordinary opportunity for the exercise of the ingenuity of the shoe designer. From an economic standpoint it would doubtless be policy for men to encourage their better halves to wear long trousers. A fancy-colored high-spike-heeled-one-strap pump would not cut much of a figure with "plus fours" or a sailor cut, long trouser.

It is plainly evident that so long as woman allows herself to be dictated to in footwear, as well as in other features of her clothing problem, solely at the behest of Dame Fashion's stylists, she is doomed to be an expensive luxury to clothe and will have to pay for her privilege to a certain extent in physical discomfort and relative disability. The human foot will put up with an amount of abuse that no man-made mechanism would tolerate for anything like the length of time that the foot will, but in the long run this abuse will take its toll.

THE OBSTRUCTING PROSTATE

BY H. QUIMBY GALLUPE, M.D., F.A.C.S.

ONE of the best known genito-urinary surgeons has said that it is not the mortality of the prostatectomies, but rather the mortality of the obstructing prostates that is to be feared. In other words, with a choice of cases one ought to expect a very low mortality in the treatment of this condition. However, as the cases run from one extreme to the other, the death rate reaches a high level. This rate may be due to treatment or the lack of it, but in good hands it is more often due to one or more complications: old age, arterio-sclerosis, a failing heart, nephritis with uremic symptoms, diabetes, cystitis, pyelitis, or a body worn out by the trials of a prostatic patient, all of which contribute to make the treatment difficult and the death rate higher. Temperorizing with the symptoms of obstruction until one or more complications begin is neither good nor wise therapeutics.

I am sure that many who are suffering from the symptoms created by obstructing prostates are carried along by the aid of urinary antiseptics and catheters until they become poor operative risks. Perhaps this method is followed because it is believed that a painful, dangerous, and time-consuming operation can be avoided, or that the patient is in such poor condition that operation seems to offer little, if any, hope for recovery. I have yet to see the patient suffering from prostatic obstruction who showed any reasonable contra-indication to proper bladder drainage. The patient who seems closest to death may return to a level which would make him a fair operative risk once bladder drainage has been established. Drainage is simple, and surely there is virtue in trying to make the sickest man better, rather than leaving him to become definitely and surely worse without rational treatment of any sort.

I recall one man who came to my office with a revolver in his pocket. He made me believe that unless I could promise him relief from extreme urgency and frequency, he would do away with himself that day. Surely, he was in extremis; tired out mentally and physically, his face drawn with pain, his skin dry and sallow. In another pocket he carried a much worn catheter which he had been advised to use when necessary, two years before. Believing that it was his only way out, he had used it faithfully from that day until he arrived at my office. During the last twenty-four hours he had catheterized himself many times in the vain attempt to get relief from his symptoms. I wonder how many men this day are using dirty catheters to relieve symptoms from which they think there is no other escape. I gave the man the promise asked, and sent him to the hospital, where his bladder was opened within a few hours. Behind an en-

ormous prostate were two stones the size of hen's eggs, which must have given rise to his most painful symptoms and which were the result of a long-standing residual urine. In six months he was back at his life-long trade as a watch maker, happy, and in excellent health. At the end of two years, he is still in good health and working at his trade. Surely, he was a poor risk, but he was becoming sicker every day, and treatment pointing to permanent relief did him no harm.

A recent experience with what seemed to be a hopeless case ought to give us courage in dealing with this type of patient. I was asked to care for a man of eighty-one with extreme urgency and dribbling. He looked a living skeleton; his face was drawn and haggard; pain and lack of sleep had taken their toll; his right chest was flat and apparently full of fluid. He presented a problem difficult to solve. Should we ignore the chest condition for the time being and drain his bladder from above? Should we institute catheter drainage, and tap his chest? Should we make him comfortable with morphine and let him end his days as easily as possible? Should we make the attempt (which I grant seemed futile) to get him well and back on his feet? We chose the latter course. Here was a dehydrated man, lacking sleep and food, mentally deranged by pain, with nerves worn to a frazzle, and suffering with vomiting and diarrhea. During the few days before entering the hospital, he had been catheterized several times without much relief and with considerable pain. It seemed that catheter drainage would not afford the relief necessary to permit sleep. His bladder was opened under novocaine; fluids were administered in all possible ways; morphine was given for several days to insure rest. His nausea and diarrhea stopped at once; his skin became warm and moist, and within three days he seemed to be a rejuvenated man. In ten days his prostate was removed under spinal anesthesia, and a week after that, his chest was tapped and a quart of straw colored fluid was withdrawn. At the end of the second week after the prostatectomy, he voided normally and seemed well on the road to recovery. What this man wanted and what his family wanted for him was relief from symptoms. He was promised that relief and got it. Now it might well have been said that he was a poor risk. He was, but I believe it better to get the patient out of his pain and distress, rather than to lay too much stress on mortality rates.

If one could choose his case for operation, one would take the man at fifty-five with a normal blood pressure for that age, with a heart and kidneys in good shape, and with no marked in-

fection of the urinary tract. Of course, he should be free from other abnormal organic conditions. This man should have a prostate which is fairly large, regular, and quite evidently not malignant. He should have a small residual urine, and a renal function of not less than forty per cent. His symptoms should be frequency and a weakened stream, and perhaps a history of one complete shutdown when a catheter had to be used. This imaginary person, taken at this time, and treated with all the care of the best procedure in prostatic surgery, should have the same chance for recovery as a person of the same age following appendectomy. One sees this type of patient fairly often, but the operation for the relief of his symptoms has not been advised, or the patient has refused to consider operation when he has not been sick enough to warrant being in a hospital for a month or more. From that time on the mortality rate begins to rise because he is left to become the risk he is sure to be at a later date. In other words, the prophylactic prostatectomy is to be advised as a fairly safe procedure, and the man at that stage of the trouble can be promised a return to normal within the limit of two months.

The second choice would be the man who has suffered the troubles of one who has had to urinate six times at night, and has had to refrain from daylight activities because of urgency and dribbling. He has had catheters passed several times, and has much pus in a large residual urine. His renal function indicates that his kidneys are damaged. He has come to the hospital for the relief of acute retention. The necessity for draining the bladder is evident, and the patient welcomes it. Examination reveals that his prostate is not large, but firm and fibrous. His general condition is poor from nervousness and loss of sleep; he has lost weight; his blood pressure is low. His color is poor, and his appetite is gone. This man's chances are not so good, the care of him pre-operatively and post-operatively is much more difficult.

The last choice is no choice at all, but rather the patient who is forced upon you at the end of his rope. He has all the symptoms of the second patient plus a disease of other parts which lowers his chances and makes his care much more difficult for those in charge of his recovery. I use the plural, for the surgeon who works alone, and without the services of an efficient internist, lessens the patient's chances and makes trouble for himself. The treatment aims for the same end in all cases: the relief of symptoms, the drainage of the bladder, and the removal of the entire gland so that the patient will be able to urinate normally. The difficulties arise from the many variations in convalescence which are due to complications demanding all the skill of the surgeon and the internist working in close harmony.

There is a variety of opinions about the pre-

operative and post-operative care of these patients, but surely there are some definite rules which govern the work. The bladder must be drained first, (whether by urethra or by suprapubic incision must be determined in the individual case) and allowed to drain until the patient returns to a condition which approximates normal. Large amounts of fluid must be given, and the method adopted must be the efficient one. The choice of the anesthetic depends upon the blood pressure, the condition of the myocardium, and the kidney function. The first stage can always be done under novocaine, and the removal of the gland can be done under spinal, sacral, gas-oxygen, or gas-ether. There is a mental element entering into the convalescence from any operation, but I believe that it is always to be considered following prostatectomy. The patients are often depressed; they seem to slump and to give up hope; they feel that the time drags and that the return to normal is far off. To combat this feeling, an air of optimism must be created by the early removal of the supra-pubic tube, which can be done in two, three, or four days after the removal of the gland. I have found that shifting the bed or the chair to the porch and into the sunlight and away from the dark corner of a ward or private room will afford the change of air, companions, and scenery which are necessary for the stimulation of a sluggish appetite. They will soon gain a sense of well being that can be accomplished in no other way. These men do better if they are not kept flat in bed, for the dangers of pneumonia and a broken skin over the sacrum are always present. Micturition will begin sooner when they are up and about, and the ability to urinate will dispel the blues better than any other one event of the convalescence. Irrigations of the bladder are essential, for they not only keep the bladder clean, but they increase the elasticity of the bladder wall. As the supra-pubic wound becomes very small, the bladder can be irrigated through the urethra. If the urine remains dirty, 1% mercurochrome can be used to good advantage instead of boric acid solution. I believe that it is unnecessary to leave a catheter in the urethra after the operation. I have always found that the urethritis resulting from the inlying catheter is objectionable to the patient, and that he finds more difficulty in moving about. I do not believe that it hastens the function of the urethra, but rather delays it. It may be found that as the bladder sinus is almost healed, urination does not take place. A good bladder irrigation at this time, or the passage of a sound may start the stream at the next desire to void. Protection of the skin about the sinus is advisable and I have found that zinc oxide ointment does very well. Frequently, patients will be able to start a small stream long before the sinus is healed and find that they can very quickly stop the flow, but cannot start it again. Continuous practice while

relaxed in bed will finally enable the patients to get perfect control of their muscles.

The following cases will serve to illustrate the types mentioned above.

1. A sixty-year-old white farmer entered the hospital complaining of acute retention. Five days before admission he had had a sensation of weight and pain in the perineum, and shortly afterward found that he could not void. He was catheterized twice each day for four days and then was advised to enter the hospital for operation. On the day before admission he had passed some urine with difficulty. During the past two years he had noticed that his stream lacked power, and that he had had to void several times at night. He had never had acute retention before this time. His past history and his family history were irrelevant to the present illness.

He was a well developed and nourished old man in excellent spirits. His skin was warm and moist. The only defect noted above the abdomen was pyorrhea. His abdomen was protuberant, but there were no masses, no tenderness, no herniae. The liver was not enlarged. His spleen and kidneys could not be palpated. His genitals and extremities were normal. The reflexes and mental reactions were normal. Rectal examination revealed a very large symmetrical, smooth prostate, quite evidently not malignant. The Wassermann test was negative. White count 7,000. Hgb. 80%. Smear normal. Renal function: 48% in two hours. Urine: dark, alk., sp. g. 1024, trace of albumen, no sugar, sediment showed a few pus cells, but no kidney elements. His temperature was 99 at admission.

A diagnosis of non-malignant obstructing prostate was made and his bladder was drained through a supra-public incision under novocaine. There were no stones nor diverticula in the bladder and the prostate was regular, smooth, and large. On the fifth day he was up in a chair and the tube had been removed. The wound was clean, and the urine clear. The gland was removed nineteen days after admission. There was no appreciable bleeding and he reacted well to the operation, which was done under gas-oxygen anesthesia. The tube was removed on the fourth day, and that same day he passed some urine through the urethra. On the eighth day he was up in a chair, and the sutures were removed from a clean wound. He voided normally on the eleventh day, and was discharged well on the twenty-first day after the second operation. A letter from him one year later said that he was well and working on his farm in New Hampshire.

2. A sixty-three-year-old farmer came into the hospital complaining of frequency, dribbling, and difficulty in starting the stream. He said that for the past four years he had had increasing difficulty in starting his stream. During the last few weeks before entrance he had voided every half hour and soiled his clothes by dribbling. He had never had acute retention, and had never passed any blood. There was no history of pain. He was constipated, and had lost his appetite. His loss of weight, which was marked, he accounted for by lack of food and sleep. He had never been instrumented, but had taken many proprietary drugs for kidney disease. He consulted his family physician for the first time two days before admission to the hospital. He denied venereal diseases, and gave pneumonia as his only illness. He had always worked hard at farm labor. His family history was irrelevant.

He was a well developed but very poorly nourished old man, apparently suffering no pain. He was nervous, pale, sweating, and evidently worn out by his condition. His teeth were very poor and he had pyorrhea. His tongue was coated. The heart and lungs were normal. His vessels were sclerosed. His

abdomen showed no tenderness, no masses, and no visible peristalsis. He had a very large right inguinal hernia, which could be reduced very easily. Rectal examination revealed a small, firm, and non-tender prostate. There were marked varicosities of both legs. His reflexes were normal. The Wassermann test was negative; white count 7,400; hgb. 85%; blood pressure 115-70; renal function 40%. Urine: cloudy, acid, sp. g. 1010, trace of alb., no sugar, and pus in the sediment.

A diagnosis of obstructing prostate, with a question of malignancy, was made, and the bladder opened under novocaine. There were no stones and no diverticula. The urethra was constricted by a small fibrous prostate. The tube was removed on the third day, and the sutures on the eighth day. He had made an excellent recovery and was up in a chair on the twelfth day. On the fourteenth day after the first operation he seemed to be quite normal and the enucleation of the gland was done under gas oxygen. The operation was long and difficult because of the fibrous nature of the gland. However, there was no unusual bleeding and he stood the ordeal well. The tube was removed on the third day, and the sutures on the eighth day. The wound was healing well. If it had not been for the hernia he might have been up on the eighth day, but under the circumstances he remained in bed until the twelfth day after the second operation. On the fourteenth day, the wound was nearly closed, but he could pass nothing through the urethra. His bladder became distended and he had to be catheterized. On the sixteenth day he was again taken to the operating room, and the bladder was opened. A small section of the gland was found to be obstructing the urethra. This was removed. He made an excellent recovery, and on the tenth day after the third operation he voided normally. In spite of the nervous element in his case, the hernia, and the necessity of a third operation, he did very well and was discharged well six and one-half weeks after admission. Four years after operation he feels well and works as much as an old man can work on his farm. He has to void once during the night, and his urine contains a few pus cells. The hernia causes him more trouble now than anything else.

3. A seventy-three-year-old leather goods salesman came to the hospital with acute retention. His trouble began four days before admission with difficulty in voiding, weakness, and pain in the region of the bladder. He gave up work then and went home to rest. Three days before he had to be catheterized. From that time until I saw him he had been dribbling constantly. He said that the pain was severe, and that he slept but little for a week. The important events in his past history were pneumonia, typhoid fever, influenza, lead poisoning, and the discovery of sugar in his urine at the age of forty. He was treated at that time for diabetes, but after six months of it he left home for the road and gave up all attempts at remaining sugar free.

He was a poorly developed and nourished old man, quite evidently in considerable pain and somewhat apprehensive. His skin was dry. His tongue was coated. He had a marked arcus senilis and his vessels were tortuous. His teeth were false. He had no glandular enlargement. The heart and lungs were normal. The abdomen was marked by the tumor of the bladder, which came up above the umbilicus. Rectal examination revealed an enormous prostate, which was smooth, not hard, and not tender. The reflexes were normal. The Wassermann test was negative; hgb. 80%; blood smear normal; white count 6,500; blood pressure 135-80; urine: acid, cloudy, sp. g. 1024; no albumen; sugar 6%.

A diagnosis of obstructing benign prostate and diabetes mellitus was made. Dieting and insulin were immediately begun to lower the sugar content of the urine. His bladder was emptied against water

pressure in a simple manometer rigged up at the foot of the bed, for it was thought best not to empty his overdistended bladder at one sitting. At the end of seven days his bladder was empty and his fluid intake and output were equal. On the sixth day he had 1% sugar and was passing much urine. His fasting blood sugar was .61 and the urea N was 60.5. He was getting 18 units of insulin three times a day. On the evening of the tenth day he was found unconscious, and was revived by the administration of 17 g. of glucose intravenously. He seemed to be in excellent condition after this insulin reaction and the next day his urine contained no sugar. On that day, the eleventh, his bladder was opened under novocaine. The prostate was very large, but there were no diverticula, and there were no stones.

He made a good recovery, and was sugar-free and acid-free on the next day. On the fourth day his intake and output were equal, and the urea N was 16.3. The tube was removed on the seventh day, and the sutures were removed on the eighth day. The urine was still sugar free. On the thirteenth day after the bladder drainage, the prostate was enucleated very easily under gas-oxygen anesthesia. He made an excellent recovery. On the fourth day there was a slight trace of sugar in the urine with the diet well up. The tube was removed with the sutures on the eighth day. On the sixteenth day the wound was closed and he was urinating normally. From this time until his discharge from the hospital about a month later he was a purely medical patient. He acquired a reasonable sugar tolerance, bought food

scales, studied his disease, analyzed his own urine, and remained sugar-free. At the end of that time he was well able to care for himself on a diet of 1400 cal.

A year after his discharge he came back in coma. After a week in the hospital he recovered and went back to work. He had had no urinary symptoms. Four years later he again returned in coma and after a week left for work. He had gained thirty-five pounds since his first admission, and said that he was in good health, working every day. He had no urinary symptoms.

SUMMARY

The type of patient has more to do with the mortality than the operation itself; the general condition of the patient and the complications arising during the treatment influence the outcome most. The poor condition of the patient should not prohibit bladder drainage, for the poorest risk may return to nearly normal. There is justification for the prophylactic prostatectomy. The convalescence may be smoothed out in many ways, chiefly by being optimistic over the final outcome. Three types have been described to illustrate the work and to particularly stress the importance of the internist in combination with the surgeon.

SUBFASCIAL HEMORRHAGE OF THE THIGH

BY WILLIAM R. HURLEY, M.D., F.A.C.S.

It is not generally recognized that, following a more or less severe injury to the thigh, a profuse hemorrhage from a torn vessel may occur under the deep fascia, and find its way unchecked along muscle and fascial planes, in some cases eventually reaching the extraperitoneal tissue of the pelvis and the prevesical space.

In such cases, the external signs of injury vary, of course, with the nature and severity of the accident, but may be very slight and therefore indicate in no way the seriousness of the underlying conditions. The symptoms also are influenced by the amount of blood lost from the circulation; in all cases, however, the picture is that of shock produced by hemorrhage, the characteristic signs of the latter predominating.

In *Surgery, Gynecology and Obstetrics* for November, 1924, Larkin of Waterbury, Conn., reported four fatal cases of unrecognized hemorrhage within the upper leg, the cause of death in three of the cases being definitely proved at autopsy.

The first of these was that of a man who had been stabbed in the right thigh. On admission there was little bleeding from the wound, and the condition of the patient was not considered serious. Not long after admission, the patient showed the usual symptoms of shock and hemorrhage. There was no evidence of bleeding from the wound. The symptoms of shock increased, and six hours after the accident the patient died. Autopsy showed a stab wound of the

right thigh that had passed through the skin, fascia, sartorius and recti femoris muscles, and skipping the femoral artery and vein, had severed branches of the deep profunda artery and vein. The whole upper leg was filled with clots of blood and blood serum. The rest of the examination was negative except for general bloodlessness of the tissues.

His second case was that of a man who, while working, had his right foot caught between a girder and crane and suddenly and forcibly rotated outward. Examination showed deep lacerations over the dorsum of the right foot and fractures of the right tibia and fibula in the lower third. There was no apparent injury of the upper leg noted. Ordinary treatment for lacerations and fractures was carried out, and the patient put to bed. Shortly after, the patient presented symptoms of shock and hemorrhage, with no local signs of active external bleeding. He went into more profound shock, and died eleven hours after admission to the hospital. At autopsy the shape of the right thigh was not noticeably changed, but when compared with the left upper leg was seen to be uniformly enlarged from knee to groin. Dissection revealed that the sartorius was completely ruptured, and the adductors partly so. An estimate of the blood found free in the leg would be placed at two quarts. In this case also there was general bloodlessness of the tissues.

The third case was one of alcoholism and a

fracture of the neck of the femur. This patient died seventy-five hours after admission. The thigh involved showed a mean general enlargement of about $2\frac{1}{2}$ inches. There was a complete intertrochanteric fracture of the femur with the surrounding musculature badly lacerated. It was estimated that one and one-half quarts of free blood were found in the leg. Other pathological conditions were present, but the primary cause of death was thought to be hemorrhage within the right leg.

The fourth case was that of a young man whose upper left leg was crushed against a girder by a crane. He was not injured elsewhere. It took one and one-half hours to free the leg, during which time the man was conscious, in great pain, but in fair condition. Just as soon as the weight was taken from the upper leg, the man went into shock and died a few moments later. No external signs of serious injury were noted. The injured left upper leg showed superficial abrasions on the anterior and lateral surfaces, and its circumference was about one inch greater than the corresponding circumference of the other leg. On palpation a fluid wave was present in the thigh. There was a complete fracture of the middle third of the left femur. The general appearance of the body was that of complete exsanguination. Dr. Larkin believed that the pressure between the girder and the crane acted as a tourniquet, but when released, a rapid and fatal hemorrhage occurred within the upper left leg.

The case I wish to report is as follows:

George C., 8 years of age, on September 12 was struck and knocked down by a truck. I saw him shortly after the accident, and found him pale and generally shaken up, but with a pulse of 80 and of good quality. He presented multiple abrasions on arms and legs, and on the right thigh, about midpoint, he showed an abrasion extending two-thirds of the way around and about four to five inches wide. There was no evidence of fracture, and the rest of the examination was negative.

A few hours later the right thigh seemed to have become swollen and more tenderness was present. There was no discoloration other than that of the abrasions. The pulse was 80, and except for a somewhat pale, anxious expression, the patient presented nothing else that was unusual. About six hours after the accident, he vomited for the first time, and became somewhat restless, but again presented nothing alarming in the way of symptoms. During this period there had been no signs or symptoms of intra-abdominal injury. About ten hours after the accident his condition suddenly changed. He became more restless, pallor was more marked, he was thirsty and complained of pain in the lower mid and right abdomen just above Poupart's ligament. Examination showed a pulse of 120, but of good quality. There was tenderness and spasm just above the pubis and the right inguinal region. The right thigh, although slightly larger than the left, showed no change. On account of tenderness and spasm of the muscles, careful examination of the thigh could not be made at this time, but no fluctuation was noted. Catheterization of the bladder revealed no evidence of injury to that organ. There was no evidence of free fluid in the abdomen. The area of tenderness in the lower abdomen began to increase in extent, and the symp-

toms of internal hemorrhage becoming more marked, operation was decided upon.

A low mid-line abdominal incision was made and the abdomen opened. About four ounces of blood-stained fluid was found in the pelvic cavity, but there was no evidence of injury to any viscus. The peritoneum of the entire right pelvis, however, including the posterior wall and anteriorly to the pubic bone and the region of the bladder, was bluish in color and was raised from its attachment by what appeared to be blood.

The peritoneum was closed and the incision in the superficial structures carried downward, opening the prevesical space. The latter was found distended with dark blood under moderate pressure which had dissected off the peritoneum over to the region of the right femoral ring. No bleeding points were found in the above area, but blood was continually welling up into the wound. A cigarette drain was inserted anteriorly and to the right of the bladder, and the wound partly closed.

As it seemed probable that the blood was coming from the thigh, an incision was made on the anterior aspect of the upper leg at the site of the abrasion. The fascia was under tension, and, when opened a large amount of dark blood escaped under pressure. The opening in the fascia was retracted, and the muscle tissue on the inner aspect of the thigh was seen to be badly crushed. No bleeding points were found in this region. From the depth of the wound, however, there was a steady flow of dark blood, in which appeared streaks of bright red blood, coming apparently from the posterior thigh. A finger inserted in this region disclosed severe muscle damage. It was probable that active arterial hemorrhage was going on in the posterior thigh, so the wound was closed and the patient placed in prone position. An incision was made on the posterior aspect of the leg just above the popliteal space. The large vessels were exposed and found to be intact. The incision was then carried upward and disclosed the semimembranosus partly severed and the semitendinosus completely severed, with blood spurting from a vessel in the latter. There was also a general oozing of blood from injured muscle in this region. The bleeding areas were tied off, the severed end of the muscles brought together, a cigarette drain inserted, and the wound partly closed.

Convalescence in this case was extremely stormy. The boy was in marked shock, which made the outcome doubtful for several days. The injured area on the thigh sloughed down to and including muscle tissue, and he had considerable bladder irritation, which caused a great amount of suffering. After several months' treatment, which included skin grafts to the thigh, treatment of the bladder irritation, the passage of sounds to overcome a narrowing of the urethra caused apparently by peri-urethral scar tissue and following which he passed a number of small calculi, he made a good recovery and is now in good condition and has fair use of his leg.

CONCLUSIONS

1. Injuries to the thigh make up a fairly large proportion of the traumatic cases admitted to a hospital. It is possible in such cases, even when the signs of injury are slight, that vessels within the thigh have been torn, in which case severe and even fatal hemorrhage may occur with very few local signs indicating the presence of such a condition.
2. In cases of thigh injury, careful watch of the condition of the patient should be maintained, particularly with respect to pulse and respiration.
3. Should symptoms of internal hemorrhage

occur, and be increasing in severity, comparative measurements of both thighs should be made, and in the event that the injured mem-

ber is larger and also shows presence of tenderness and tension, exploration of the thigh is indicated.

RESULTS OF ONE YEAR'S BRONCHOSCOPIC STUDY*

BY LEIGHTON F. JOHNSON, M.D.

THE scope of the conditions calling for either diagnostic or therapeutic endoscopy has been fully presented by such pioneers as Jackson and Mosher. The present report deals with the application of this method to the series of cases which have presented themselves at the Bronchoscopic clinic associated with the Evans Memorial during the calendar year of 1926.

During the past twelve months, we have performed approximately 200 endoscopic operations on the larynx, trachea, bronchi, and oesophagus for a wide variety of conditions. A group of seven cases of laryngeal stenosis has proven of unusual interest. These little patients were received a year ago markedly stenotic and wholly dependent on their tracheostomic fistulae for air. The stenoses resulted from a diphtheritic laryngeal infection. All seven cases were in children ranging from five months to eleven years of age. They were admitted to the hospital as Out-Patients and have come in for weekly dilatations. The baby that was received at the age of five months was decanulated after six months of treatment. We have three other patients whom we are now dilating with the No. 26 bougie, and who are wearing their tubes corked most of the time. We feel it is logical to expect that during the next few months these patients may be decanulated. The other three cases appear to be essentially stationary and although it is our intention to carry on with them on the same basis, it is not unlikely that they will come to a laryngostomy.

One cannot fail to react to the extreme obstinacy of this condition and to be profoundly impressed with the marked difficulty in establishing the patency of the normal airway. I feel that much can be accomplished in a preventive way on the one hand by a clearer understanding of the technique of tracheotomy and, on the other, by obviation of prolonged intubation. In the first instance, only the low type of tracheotomy should ever be considered and greater emphasis should be laid on the post-operative care with a special nurse constantly in attendance. In the second instance, cases of laryngeal obstruction calling for intubation should not be allowed to wear the tube over long periods, for in this manner trauma with cicatricial formation is evoked, or again, the mere presence of the tube may produce a subglottic or supraglottic hyperplasia. It appears that in this type of case earlier tracheotomy is strongly indicated and if

generally practised, the incidence of laryngeal stenosis would be markedly lessened.†

Bronchoscopy has so developed in the past few years that it has become an integral part of the service rendered by any large hospital. From our clinic let us cite cases pertaining to three groups:

1. Those whose therapeutic problem is primarily that of the endoscopist.
2. Those problems primarily of the internist.
3. Those primarily of the thoracic or general surgeon.

In the first instance the extraction of foreign bodies from the oesophagus and respiratory tract is a technical bronchoscopic problem, but any attempt at removal without the assistance of the roentgenologist and internist would simply be courting failure and disaster.

Two case reports:

CASE 1. Pebble in left bronchus.

A five-year-old girl was admitted to the hospital with a history of having choked with a pebble in her mouth while playing on the beach. She was slightly cyanotic, and had the unmistakable pathognomonic asthmatoïd wheeze. The X-ray located a pear-shaped foreign body in the trachea. A bronchoscope (No. 5) was easily passed, the foreign body located, and seized with Jackson's forward grasping forceps. Resistance was encountered in coming out through the glottic chink and the pebble pulled away from the forceps. With the fluoroscope, the foreign body was found to be in the lower left stem bronchus. As the child seemed to be breathing more easily, it was decided to send her back to the ward and make another attempt in 24 hours. The next morning, with neither general nor local anesthesia, the foreign body was seen and grasped through the bronchoscope. Again at the glottic chink the foreign body was lost and this time was located at the bifurcation by the fluoroscopist. The bronchoscope was immediately reinserted and the foreign body successfully extracted. The child left the hospital three days later free from her râles and asthmatoïd wheeze.

There is a decided resistance encountered in extracting a foreign body through the larynx. In the above case the pebble was so smooth and slippery that a sufficiently powerful grip to overcome the laryngeal resistance was difficult to secure.

CASE 2. Lead cat in oesophagus of four-months-old baby for five weeks.

A four-months-old baby was admitted to our Hospital after receiving treatment for three weeks elsewhere. In the X-ray examination an opaque foreign body was found in the oesophagus at the level of the suprasternal notch. With an oesophageal speculum, a lead cat was quickly and easily extracted. The

*Read before the Staff of the Evans Memorial on April 14, 1927.

†A word of commendation must appear for the extreme patience, faithfulness, and coöperation which the mothers of these patients have shown.

baby was given a suitable formula and left the Hospital in 24 hours.

This foreign body was the type purchased in the penny prize-package of candy. The level of the sternal notch is the classical location for the lodgment of foreign bodies in the oesophagus. From the oesophagus, at this level, we have removed several chicken bones, poker chips, coins, rivets, etc.

In the second group the internists have called on us to aid in the diagnosis of such conditions as lung abscess, chronic bronchitis, bronchiectasis, and unexplained cough. In this class of respiratory infections, it has been possible to assist not only in the establishment of a diagnosis, but also by bronchial aspiration and topical medication to the bronchi, to aid the internist with his therapeutic problem. During the period covered by this paper certain difficulties encountered with our lipiodol injections have been overcome and the internist is now offered more informative data by delineating lung suppurative processes.

CASE 3. Lung abscess.

Mrs. H., age 50, gave a history of pneumonia over a year ago, from which she never fully recovered. She spends much of her time in bed, has lost much weight, her appetite is very poor, she has a temperature daily, ranging from normal to 101, and coughs up a lot of pus. Many examinations of sputa have been found negative for tuberculosis. With the aid of the X-ray, a diagnosis of a large abscess of the left lung was made. This patient has come in weekly for bronchial aspiration, and usually an injection of 5 cc. mercurochrome solution into the left stem bronchus. Markedly lessened expectoration, a gain in weight, increased appetite, and a normal temperature is the story of the patient's progress.

CASE 4. Lung abscess.

A young man, age 32, was operated upon for duodenal ulcer. Four days after the operation there was a sharp rise of temperature and pain in the left chest, accompanied by an incessant unproductive cough. Medical and X-ray consultations found an area in the upper lobe of the left lung. The patient was bronchoscoped. Nothing unusual was noted until the opening of the upper left bronchus was observed. This appeared reddened and oedematous. There was no pus seen in the trachea or left bronchus. A sponge dipped in 10 per cent. cocaine was placed over this area, and, on its removal, a small amount

of pus was seen coming from this shrunken area. Frequent bronchoscopies and bronchial aspiration, while not productive of a cure in this case, have lessened the size of the cavity and the expectoration. The patient reports that he feels finely and it is with difficulty that he is persuaded to remain under observation.

To the third group, comprising the general surgeons, much information has been given regarding neoplasms, strictures, and diverticula of the oesophagus, and also in the localization of lung abscesses.

CASE 5. This patient was a male, age 35, with a left empyema of a year's duration. For five months previous to admission, he had had a discharging sinus that had burrowed down to the left hypochondriac region. On admission a rib was resected and drainage established. Bronchoscopy was requested by the surgeon to establish the dilatability of the lung. If the adhesions attendant upon the suppurative process would permit the lung to function, a decortication operation would be considered. If not, a collapsing type of operation must be the only recourse. To establish the dilatability of the lung, a bronchoscope was passed into the left stem bronchus, under local anesthesia. Oxygen was then piped under pressure to the lung through the aspirating canal on the bronchoscope. During this procedure, the lung was under fluoroscopic observation by our roentgenologist, who reported as the only change a further displacement of the heart to the right. These findings were submitted to the surgical service.

No general anesthesia is being used in the clinic except in certain rare instances where the patient insists on it. Children are receiving neither general nor local anesthesia for any of the endoscopic operations. With adults, morphine is given subcutaneously, and for bronchoscopy, the superior laryngeal nerves are cocaineized in the pyriform sinuses.

Too great emphasis cannot be placed on the necessity for trained assistants and a complete equipment. The problem of permanent assistants has been solved by establishing an afternoon clinic, at which time our nurses and interns are free to give their help without interruptions. The work has been found to be exacting in the extreme, and without a well trained team, coöperation, adequate equipment, and constant practice, efficiency is impossible.

RUMINATION OF AN OUT-PATIENT PHYSICIAN*

BY DWIGHT O'HARA, M.D.

MAN has ever been bored by the commonplace and excited by the unusual. Let a child fall from a third story window and be killed, and the incident will be almost ignored, but let it fall and be unhurt and you have a subject for gossip. The rare diseases likewise have for the physician a thrill of interest which the common affections have not.

Although Mackenzie's admonition that the opportunity to study early symptoms is being

*From the Medical Outpatient Department of the Boston City Hospital.

neglected has been partly met by the frequent appearance of the more mature clinicians and advanced students in the Out-Patient Department, there is still a propensity to single out the museum cases for demonstration and discussion. And those of us whose duty it is to "see the rest" often find ourselves, at the close of the clinic, recounting the unusual finds of the morning, quite forgetting the daily panorama of wretched hygiene which stalks before us. There are times when one blushes to hang so many patients on the diagnostic gibbets of "obesity,"

"constipation," "menopause symptoms," etc., for the conviction is hard to escape that some of them deserve a better fate. (If there are in the profession any who still call themselves "diagnosticians," it is time they took their turn either in general practice or in one of the larger out-patient departments.) Whatever its limitations, the out-patient clinic presents an opportunity to delineate the bodies of a large number of people who are suffering from comparatively minor ailments. A review of the diagnoses made in the Medical Out-Patient Department of the Boston City Hospital during a recent two-month period is the origin of these reflections.

If the 1081 new cases had entered the clinic successively and at equal intervals of time, there would have been a new case appearing every hour and a quarter. There would have been a case of obesity every eighteen hours, a case of hypertension every twenty-four hours and a case of diabetes every five days, Sundays and holidays included, throughout the two-month period. Dr. Leonard Williams of London has recently written a book called "Middle Age and Old Age." In it is a chapter called "Red Lights," in which are discussed those signs of advancing years which appear in man while he still is, or still believes himself to be, in his prime. The cases designated above are among those for whom Dr. Williams' red lights were on. There were of course, others, such as those with symptoms of cardiac weakness on exertion, who were also being ordered to stop. We physicians are traffic officers trying to keep these people out of a Supreme Court. We should try to so direct them that they do not have to stop short. We should try to give them a "yellow light," for some of them are driving heavy cars on wet pavements.

Many people are already eager to regulate their lives intelligently and have ceased to entertain the mistaken idea that after the body has been abused to the point of physiological uselessness, it may be restored by a magic potion from the medicine man. Yet every day we are meeting people, going about their everyday work, more conscious of the few dollars they are adding to their pockets than they are of the few cubits they are adding to their belts, and the few millimeters to their blood pressures. The incidental mention of some of these yellow lights is no more than a duty of the medical profession, for we doctors cannot quite free ourselves from the reproach of being partially responsible for them. After we uncovered the spectre of tuberculosis, we taught its victims that their insurance against it was to grow fat and strong. We have rightly striven against the undernutrition of children, still all too prevalent in many quarters. But when we carry our ideas on child nutrition into the colleges we are getting dangerously near the end of the plank. And when we carelessly talk to college alumni of "physi-

cal fitness" in terms of under-nutrition and over-nutrition, we are actually stepping off into a pedantic sea. To learn that the "under-nourished" Dartmouth freshmen achieved greater scholastic success than their fellows is not surprising to those of us who have seen the woes of the overnourished in large numbers. Even the admirable handbook on the Health Examination, issued by the Massachusetts Medical Society, has included tables in which the weight for each height group increases progressively with age. Very appropriately these tables are cut short at sixty years, for were they to continue to increase very few would reach the next decade. The fat old man is an anomaly.

I do not want to take up the thesis of under-nutrition against over-nutrition except in the middle age group. Under thirty-five the present preference for "the tall thin one" has perhaps overcorrected any tendency to obesity in the young adult group. I do wish to point out that approximately ten per cent of ailing people are ailing because they have been indulging over a period of years in greater intake than is called for by their output. They are constantly running with their carburetors choked. The "carbon" is not only deposited in their subcutaneous tissues, but also in their hearts, livers and kidneys; their engines cannot run smoothly, nor can they get great mileage. One would like to make the charge that obesity is always the result of an excess of intake over output, but the Obesity Clinic has reported that about 20% of their patients have a lowered basal metabolism. These patients cannot be dismissed so casually, and yet who knows but that obesity and mild hypothyroidism may not both be results of the same cause? The obese individual would seem to be one who calls for less heat production, and in a large number of cases of diabetes the endocrine disturbance seems to be secondary to obesity and prolonged dietetic overload.

On our record forms is the item "best weight," which invariably connotes the meaning "greatest weight." Miss O. C. Davis, in charge of the Medical Department, has indulged in a little investigation of the patient's own ideas of weight. If an obese patient's "best weight" is given as that just recorded on our scales, and they are asked how much they weighed a year previously, it is often found that there has been a marked increase just prior to the time that they decided to consult the clinic. When such a patient complains of dyspnea, without oedema, of pains in the knees or ankles, of fatigue, etc., the picture is usually complete without further history or examination. Sometimes a patient will pull out a pack of thumbtaped cards giving various dates and weights as recorded by the weight vending machines. Some patients are very keen about keeping such a record, but it has no significance to them, in fact most of them think that excess nourishment

means excess strength. Whatever they think, after a careful history and physical examination, obesity was found to be the sole cause of symptoms in 3% of 516 men, averaging 56 years, and in 12% of 565 women, averaging 44 years of age. In addition, in half as many more cases, obesity coexisted with a more formidable diagnosis, such as hypertension or myocardial degeneration. It is evidently a difference in degree only between these people and the much greater number who put on weight between the ages of thirty and fifty, but who remain free from symptoms. Are these moderate increases in weight to be winked at? There is no doubt that the life insurance companies do wink at them, for they would get very little business if they did not, but let the usual moderate increase become immoderate and the applicant will have increasing difficulty in obtaining his policy. This is a subject in the discussion of which it is not difficult to become a "crank."

Another red light is that of hypertension, a condition which ought to be more rigidly interpreted, even though we may be unable to alter it. How wearied one gets in answering the question, "What is the normal blood pressure, doctor?" Those who ask the question are frequently disappointed to learn that it is not "100 plus the age." Another medical epigram gone! A rise of a millimeter of mercury for every year may be an average observation, but it surely means that the cardiovascular machine is beginning to wear. Correctible defects can usually be found, but the results of their correction are often baffling from the therapeutic point of view. One redeeming feature is that obesity and hypertension frequently coexist, and that the treatment of the former may alleviate the latter. If someone, by solving the hypertension problem, could prevent the cardiac failures, the cerebral hemorrhages and the chronic nephroses which overtake so many in early old age, he would, in my opinion, place himself on a plane with Jenner, Pasteur and Lister as a benefactor of mankind.

The essence of the health examination should be, not, as some of our compendiums tell us, to

record all from the demise of the subject's grandparents to the percussion measurements of his spleen, but to prevent, if possible, the development of these few easily recognized signs of bodily degeneration. If by such a point of view, we can simplify health examinations, then by so much can we make them available to a greater portion of the population. But we must recognize that biologically civilized man differs from all other animals in his habits, and that these differences definitely limit us in any attempt which we may make to change his environment to the end of prolonging life.

In the first place, man has tampered with his foodstuffs. A lump of sugar represents the nourishment of two feet of sugarcane. Man no longer hunts his game; he buys it, often with no more exertion than that necessary to ask for it. He often buys meat which has been altered for the market by castration, and he invariably still further alters it by cooking. In the second place, the response of man to external stimuli is frequently abnormal. Dr. Cannon has shown us that epinephrin is secreted under the stimulation of fear, and that biologically it prepares the animal for flight or fight, while civilized man usually responds to fear and other emotional stimuli, not by indulging in the vigorous exercise which either of these reactions imply, but by physical inaction, worry and anxiety. Such changes we cannot correct, though we may well ask the question, are they or are they not fraught with danger to the integrity of our metabolic processes?

In these rambling paragraphs I make no pretense to present new material. I suggest, however, that in middle age rises in weight and blood pressure, be they ever so little, are the earliest and commonest signs of physiological degeneration, and that they therefore herald the Coming of the Evil Day. I also suggest that our civilized environment is biologically a factor in the production of these degenerations. And lastly, I suggest that the manometer and scales (also the gifts of civilization) are equal in value to all the remaining instruments and gestures of the health examination.

PUBLIC HEALTH ADMINISTRATION IN MASSACHUSETTS

BY JAMES A. TOBEY, LL.B., DR.P.H.

EARLY HEALTH LEGISLATION¹

MASSACHUSETTS has always been preeminent in public health administration. As colony and commonwealth, Massachusetts was the pioneer in public health matters. Here was passed the first sanitary legislation in the history of the country, here was promulgated the first general health law, and here was established the first State Board of Health. The early history of public health development in Massachusetts is, in fact, also the principal item in the contemporary history of public health in the United States.

Boston was settled in 1630. Seventeen years later the General Court of Massachusetts Bay Colony adopted an order regulating the quarantine of vessels from ports of the West Indies. The reason for this act was a "plague, or like grievous infectious disease," which had "ragged exceedingly in the Barbadoes, and other islands of the West Indies." This order was passed in March of 1647 or 1648 and repealed in May,

1649, "seeing that it hath pleased God to stay the sickness there." This was the first sanitary legislation in America.

After the repeal of this act, quarantine was not imposed on any vessels until 1665, the year in which occurred the famous plague of London. About this time the selectmen of Boston passed various rules relating to nuisances, but no general health legislation was adopted until 1678 when, following a severe epidemic of smallpox, the Plymouth Colony made regulations for the care of smallpox patients and the disposition of their clothing. An act "to prevent the spreading of smallpox and other infectious sicknesses and to prevent the concealing of the same" was passed by the Province of Massachusetts Bay in 1742.

In 1797, eight years after the adoption of the Federal Constitution, Massachusetts passed what came to be known as the "Great Public Health Act." It was the first State law which authorized the appointment of local health officers, though in scope it dealt largely with quarantine matters, the expressed object being "to prevent the spread of contagious sicknesses." Newburyport, in 1797, was the first municipality to create a local health organization, while the town of Boston followed suit in 1799, Paul Revere being first president of the Board of Health. Thus, local health administration antedates State health organization in Massachusetts by some seventy years. The principle of local self-government always has been strong in this commonwealth, a fact reflected even today in the relative powers of the State and local health authorities.

Various municipalities established boards of health in succeeding years, but the next half century after the passage of the Great Public Health Act saw no notable developments in State health work in Massachusetts. Public health itself was advanced by the gradual promotion of the vaccination movement, the Jenner method having been first performed in Boston on July 8, 1800 by Dr. Benjamin Waterhouse. Water supply and sewage disposal were also advanced in Boston during this period, and in 1846 ether was discovered by Dr. W. T. G. Morton. It was not until the middle of the nineteenth century, however, that State health administration received its great impetus and this it got from the remarkable report of the Massachusetts Sanitary Commission.

REPORT OF THE SANITARY COMMISSION

From 1847 to 1849 the passage of an act to authorize the making of a sanitary survey of the State was urged upon the legislature by one Lemuel Shattuck, who was not a physician, but a teacher, a statistician, and sociologist. He had been responsible in 1842 for the passage of an act by the legislature for a system of registration of births, deaths, and marriages, and in 1845 he had made a sanitary survey and census of Bos-

ton. The American Statistical Association and the Massachusetts Medical Society joined with him in 1847 in urging a sanitary survey of the State and in 1849 this was authorized by the legislature. A Sanitary Commission of three was appointed, with Shattuck as a member. He wrote a notable report which was published in 1850.

The report of the Massachusetts Sanitary Commission, a document of some 500 pages, contained not only a plan for a sanitary survey of the State, but a detailed outline for a complete State department of health. The report was divided into three parts, the first dealing with the sanitary movement abroad, the second with the sanitary movement at home, and the third part containing the plan. The State measures recommended by Shattuck included:

1. The revision of the State health laws and passage of a new and improved law.
2. Establishment of a general Board of Health, the duties of which should be to have general direction of the census, to superintend the execution of the State sanitary laws, to examine and decide sanitary questions submitted by public authorities, to advise the State as to sanitary arrangements of public buildings and institutions, to instruct local boards of health, to suggest local sanitary rules and regulations, to recommend other measures for the promotion of public health, and to report annually to the State.
3. Composition of this board to include two physicians, one counsellor at law, one chemist or natural philosopher, one civil engineer, and two persons of other professions or occupations.
4. Appointment by the board of a suitable and competent person to be secretary to devote full time to the duties of his office, and be paid a proper salary for his services.

The report also recommended the appointment of local boards of health and health officers throughout the State. In all, there are fifty recommendations, covering every phase of public health. At the end seven cogent reasons were given for adoption of the plan and a bill was submitted to carry it into effect. Whipple says², "It is doubtful if a more orderly report was ever presented to the Legislature."

This report, which Professor Winslow has characterized³ as probably the most remarkable document in the history of public health, was promptly tabled. Although efforts to secure action were made from time to time, nothing was done until 1869 and the report reposed in the dust of the State House attic.

On June 21, 1869, ten years after Shattuck's death, an act to create a State Board of Health for Massachusetts was approved, and Governor William Claflin, with the advice and consent of his council, appointed a board of seven, three of whom were physicians, one a lawyer, one a civil

engineer, one a historian, and one a business man. Thus, there came into being the first State board of health in this country, and the ideals of Shattuck were about to be realized.

The duties of the board were advisory, rather than executive, and were defined in the act of establishment as follows:

The board shall take cognizance of the interests of health and life among the citizens of this Commonwealth. They shall make sanitary investigations and inquiries in respect to the people, the causes of disease, and especially of epidemics, and the sources of mortality and the effects of localities, employments, conditions and circumstances on the public health; and they shall gather such information in respect to those matters as they may deem proper, for diffusion among the people. They shall advise the government in regard to the location of any public institutions. They shall, in the month of January, make report to the Legislature of their doings, investigations and discoveries during the year ending December thirty-first, with such suggestions as to legislative action as they may deem necessary.

Among the early activities of the board were: investigations and suggestions for improvement of methods in slaughter houses; studies of the use and effect of intoxicating liquors; researches on housing and ventilation; investigations of water supply, stream pollution, and waste disposal; and various investigations on the spread of diseases. This was the period before the brilliant researches of the illustrious Pasteur had demonstrated the germ theory of disease and so the effect of environmental conditions other than the dissemination of microbe infection was particularly stressed. Local health organization was fairly well developed, 262 of the 279 towns of the State having in 1873 boards of health composed of the selectmen. In only six instances, however, were physicians members of the boards. From 1874 to 1879, therefore, one of the principal duties of the State board was the stimulation of more efficient local health organization.

THE SECOND PERIOD, 1879-1886

In 1879, for political reasons, the Legislature passed a law combining the former Boards of Health and of Charities into a new State Board of Health, Lunacy and Charity. It had nine members, only three members of the former State Board of Health of seven being retained. The condition of the board was somewhat unsettled during the next seven years, but the scientific activity continued, some notable work being done along the lines of water supplies and sewage disposal. In 1882 the Legislature passed a Food and Drugs Act and further laws on this subject in 1883 and 1884. This was the second instance in the United States of the delegation of pure food work to a State board of health, New York having previously adopted such a law.

THE STATE BOARD OF HEALTH, 1886-1914

On March 14, 1884, the State Board of Health

was reestablished and separated from charity and lunacy, so called. Dr. Henry P. Walcott, who had been appointed to the board in 1882 after two years as Health Officer, became chairman of the board and served continuously for the next twenty-eight years. Dr. Samuel W. Abbott, who had succeeded Dr. Walcott as Health Officer in 1882, became Secretary and held office for eighteen years, until his death. Another member whose influence was of tremendous value was Mr. Hiram F. Mills, a prominent civil engineer, who remained a member of the board for thirty years. This whole period from 1886 to 1914 is, in fact, the story of the careers of many great men. It is an example of the influence of personality on public health.

The duties of the new board were broader than the first board, and were stated to be to take cognizance of:

1. The causes and prevention of infectious diseases.
2. The suppression of nuisances, including the regulation of noxious and offensive trades.
3. The collection and diffusion of information relative to industrial hygiene, or the effects of different occupations, industries, and domestic pursuits upon people at various ages and under various conditions of life.
4. The hygiene of schools, school buildings, and public institutions.
5. The examination and investigation of public water supplies and public ice supplies, and the prevention of their pollution.
6. The investigation of drainage and sewerage systems or plans, so far as they relate to the public health.
7. The disposal and transportation of the dead.
8. The inspection of food, drugs, and other articles affecting the public health.
9. Inquiries into the causes and means of prevention of insanity.
10. Inquiries into the amount of intemperance from the use of stimulants and narcotics, and the remedies therefor.
11. The protection of human life.
12. Investigations as to the infectious diseases of animals, so far as they affect the public health, e. g., hydrophobia, trichinosis, glanders, anthrax, etc.

The first ten years of the existence of the new board was characterized by important contributions to the engineering side of public health. In 1886 the Legislature had passed an act to protect the purity of inland waters and an engineering division was accordingly created in 1886 in order to carry out the provisions of the law. Chemical analyses were begun for the board by Dr. Thomas M. Drown at the Massachusetts Institute of Technology in 1887 and in the following year Professor William T. Sedgwick of the Institute was appointed consulting biologist to the board. An experiment station was established at Lawrence, Mass., and in following years the results from the researches there were, as Whipple has expressed it, "probably—as valuable as the results of all other American sewage experiment stations put together." The staff included many persons who were later to achieve

national and international reputations, and, to quote again from Whipple, "No better example can be found of the wisdom of the principle of putting money into men instead of buildings, into brains instead of elegant equipment."

Classic reports on the purification of water and the disposal of sewage were issued from the Lawrence Experiment Station during the seven years following 1888. In 1895, however, came the end of this great engineering research, though excellent engineering work has been continued by the board and its successors to this day. The year which marked the end of the water and sewage research was, nevertheless, notable for the beginning of a new activity of vast importance. Following the lead of New York City, a laboratory for the manufacture of certain biological products was established. Dr. Theobald Smith became chief of this Antitoxin Laboratory and also occupied the chair of comparative pathology at the Harvard Medical School.

Many notable contributions to public health emanated from this laboratory during the nineteen years of Dr. Smith's service. At first only diphtheria antitoxin was made, but later tetanus antitoxin, smallpox vaccine, serum for cerebrospinal meningitis, typhoid vaccine, and other products were manufactured and distributed. Many studies were undertaken, such as research on human and bovine tuberculosis, anthrax, glanders, poliomyelitis, rabies, malaria, and other diseases.

In 1898 Massachusetts established the first State sanatorium for the tuberculous. This institution, located at Rutland, was the pioneer of its kind in the country. It was not directly under the supervision of the State health department until 1919, being in the interim under the direction of a special State board of trustees for hospitals for consumptives.

After the death of Dr. Samuel W. Abbott in October, 1904, Dr. Charles Harrington became Secretary of the Board and immediately launched upon a campaign for clean milk. In 1907 the Legislature passed an act which greatly increased the influence of the State Board of Health throughout the commonwealth. It provided for the appointment of State Inspectors of Health in fifteen districts. This was the first system of the kind to be put in force in the United States, though it has subsequently been adopted in other States. The number of districts was changed to eight in 1914, and the title of Inspector was changed to District Health Officer. The number was reduced to seven in 1920. In addition to their other duties, much attention was given by these inspectors to industrial hygiene until 1912 when the Legislature turned over to a newly created State Department of Labor and Industries the work of factory inspection.

The District Health Officers act as the representative of the Commissioner. Their powers and duties are now set forth by law as follows:

SECTION 18. Every district health officer shall inform himself respecting the sanitary condition of his district and concerning all influences dangerous to the public health or threatening to affect the same; he shall gather all information possible concerning the prevalence of tuberculosis and other diseases dangerous to the public health within his district, shall disseminate knowledge as to the best methods of preventing the spread of such diseases, and shall take such steps as, after consultation with the department and the local authorities, shall be deemed advisable for their eradication.

THE STATE DEPARTMENT OF HEALTH

The State Board of Health was succeeded in 1914 by a Department of Health, with a commissioner and a public health council in place of the former board and secretary. Massachusetts was not the first State to adopt this system as New York and Pennsylvania had had the commissioner plan with a council for some years. Following these examples other States established similar departments in succeeding years, so that there are now about a dozen States operating under this system in public health matters.

The Act of July 7, 1914 (Chapter 792) creating the new State Department of Health provided that it should consist of a Commissioner, a physician skilled in sanitary science and experienced in public health administration, appointed by the Governor, with the advice and consent of his council, for a term of five years; and a public health council, consisting of the Commissioner and six members appointed by the Governor, with the consent of his council, for three-year terms. At least three of the six appointive members must be physicians. The duties of the public health council were stated to be:

... to make and promulgate rules and regulations; to take evidence in appeals; to consider plans and appointments required by law; to hold hearings; to submit annually to the general court, through the governor, a report, including recommendations as to needed health legislation; and to discharge other duties required by law; but it shall have no administrative or executive functions.

The duties of the Commissioner, who is required to devote full time to his office, and whose compensation was set at \$7500 per annum, were stated to be:

... The commissioner of health shall be the administrative head of the state department of health. His powers and duties shall be to administer the laws relative to health and sanitation and the regulations of the department; to prepare rules and regulations for the consideration of the public health council; and, with the approval of the public health council, to appoint and remove directors of divisions, district health officers, inspectors, and other necessary employees, and to fix their compensation, subject to the approval of the governor and council, within the limitations of appropriations therefor. Directors of divisions and district health officers shall be exempt from civil service regulations. The commissioner of health shall submit annually to the public health council a report containing recommendations in regard to health legislation; and he shall perform all executive duties now required by law of the state board of health and such other duties as are incident

to his position as chief executive officer. He may direct any executive officer or employee of the state department of health to assist in the study, suppression or prevention of disease in any part of the commonwealth.

The Commissioner is also authorized by this law to set up divisions in the department, with the approval of the Council, and to appoint, fix salaries for, and remove directors of such divisions, subject to the Council's approval. He also appoints and removes the seven district health officers, who must be graduates of an incorporated medical school admitted to practice in the commonwealth, or shall have had at least five years' experience in public health duties and sanitary science. The salaries of these district officers were originally set at \$3500 a year, but an amendment of 1920 left their compensation to the discretion of the Commissioner.

A deputy commissioner, designated from the directors of divisions, was authorized by a law of 1919 (Chapter 350). In this year the executive and administrative functions of the State government were reorganized, but the Department of Health was continued as authorized in 1914, except that the title of the commissioner was changed to "commissioner of public health," and a division of sanatoria was required to be set up in the department. Directors of divisions and district health officers were exempt from civil service requirements by the law of 1914 and the law of 1919 extended this exemption to assistant directors and epidemiologists.

In 1914 Dr. Charles V. Chapin, on behalf of the American Medical Association, made a survey of all State health departments and attempted to rate their activities on a basis of 1000 points for a perfect score. Massachusetts received 745 points, the highest rating of any State¹.

The first commissioner under the law of 1914 was Dr. Allan J. McLaughlin, who was loaned to the State by the United States Public Health Service, of which he was a surgeon, and later assistant surgeon general. Dr. McLaughlin served until 1917 when he was succeeded by Dr. Eugene R. Kelley². On his death in 1925, Dr. George H. Bigelow, the present commissioner, was appointed.

PRESENT ORGANIZATION

Massachusetts had a population of 3,852,356 by the census of 1920 and an estimated population of 4,023,373 the middle of 1923. It has an area of 9,124 square miles and an assessed property valuation in 1923 of \$5,971,195,782¹⁰.

The present (1927) organization of the Department of Public Health consists of the Commissioner of Public Health and the Public Health Council and eight administrative divisions, as follows:

Administration
Communicable Diseases
Sanitary Engineering

Water and Sewage Laboratories
Food and Drugs
Biologic Laboratories
Hygiene
Tuberculosis (Sanatoria)

The chief of each of these divisions is a full-time employee. The activities of each of the divisions may be briefly summarized as follows:

Administration: Has charge of finances, personnel and general internal administration, including correlation of the activities of the several divisions. Temporarily the cancer activities of the department are also in this division.

Communicable Diseases: Deals with the prevention and control of the communicable diseases, by receiving reports, conducting epidemiological investigations, maintenance of a diagnostic laboratory, and advice and demonstration to local officials. Between 1917 and 1924 a subdivision of venereal diseases was maintained, but this was discontinued in the latter year and merged with the division as a whole. The division supervises the work of the seven district health officers. It also provides immunization for inmates of State institutions.

Sanitary Engineering: Receives applications for advice with reference to water supplies, ice supplies, sewage, stream pollution, and other engineering matters; consults with local authorities and other State departments; and makes special investigation as authorized or requested from time to time.

Water and Sewage Laboratories: The work has two divisions, analysis and research. Chemical, bacteriological, and microscopical examinations are made of water, ice, sewage, trade wastes, shellfish, etc. Special studies are conducted at the Lawrence Experiment Station.

Food and Drugs: Makes inspection and analyses of samples in connection with the enforcement of milk, food, drugs, cold storage, slaughtering, bakery, mattress, coal, and other laws. Coöperates with Federal and local officials. Arsenical and a prophylactic for ophthalmia neonatorum are produced in this division.

Biologic Laboratories: Has two divisions, the Antitoxin and Vaccine Laboratory and the Wassermann Laboratory. Manufactures and distributes biologic products.

Hygiene: Conducts a maternity and infancy program. Massachusetts is one of the half dozen States which has never accepted the Federal Maternity and Infancy Act of 1921. This division also stimulates school hygiene work, and conducts work in nutrition, oral hygiene, and general popular health instruction. The Department issues a quarterly bulletin, *The Commonwealth*, which is edited by this division.

Tuberculosis (Sanatoria): Conducts a general antituberculosis campaign and supervises the four State sanatoria, each of which is in direct charge of a medical superintendent. In 1924 Massachusetts inaugurated a ten year

tuberculosis campaign, directed chiefly at the detection and prevention of the disease in children.

HEALTH ACTIVITIES OF OTHER DEPARTMENTS

Vital statistics in Massachusetts are collected by the office of the Secretary of State. Massachusetts is, in fact, now the only State in the country where the collection of vital statistics is not a function of the State health department. The first vital statistics law in Massachusetts was passed in 1842 and this commonwealth was one of the original members of the birth and death registration areas. Unsuccessful attempts have been made from time to time to have the vital statistics collection transferred to the Department of Public Health, where this function obviously belongs.

A division of mental hygiene was established in the State Department of Mental Diseases in 1922 (Chapter 519) and its duties stated to be: "to take cognizance of all matters affecting the mental health of the citizens of the commonwealth, and shall make investigations and inquiries relative to all causes and conditions that tend to jeopardize said health, and the causes of mental disease, feeble-mindedness and epilepsy, and the effects of employments, conditions and circumstances on mental health, including the effect thereon of the use of drugs, liquors and stimulants. It shall collect and disseminate such information relating thereto as it considers proper for diffusion among the people, and shall define what physical ailments, habits and conditions surrounding employment are to be deemed dangerous to mental health."

The Department of Education has certain duties in regard to school hygiene, including prescribing of blanks for physical examinations, "after consultation with the department of public health."

The Department of Public Welfare has duties in connection with the care of children.

The Department of Labor and Industries has charge of factory inspection, including sanitation, and industrial hygiene.

POWERS OF THE DEPARTMENT OF PUBLIC HEALTH

The present general powers and duties of the Department of Public Health are given in the law¹¹, as follows:

SECTION 5. The department shall take cognizance of the interests of health and life among the citizens of the commonwealth, make sanitary investigations and inquiries relative to the causes of disease, and especially of epidemics, the sources of mortality and the effects of localities, employments, conditions and circumstances on the public health, and relative to the sale of drugs and food and adulterations thereof; and shall gather such information relating thereto as it considers proper for diffusion among the people. It shall advise the government concerning the location and other sanitary condition of any public institution; and shall have oversight of inland waters, sources of water supply and vaccine institutions; and may, for the use of the people of the common-

wealth, produce and distribute antitoxin and vaccine lymph and such specific material for protective inoculation, diagnosis or treatment against typhoid fever and other diseases as said department may from time to time deem it advisable to produce and distribute; and may sell, under such rules, regulations or restrictions as the council may establish, such amounts of the various biologic products prepared or manufactured in the laboratories of the department, as constitute an excess over the amounts required for the diagnosis, prevention and treatment of infectious diseases within the commonwealth. It shall annually examine all main outlets of sewers and drainage of towns of the commonwealth, and the effect of sewage disposal.

SECTION 6. It shall define what diseases shall be deemed to be dangerous to the public health.

Powers of the department relative to the control of communicable diseases are stated by law as follows:

SECTION 7. If smallpox or any other contagious or infectious disease declared by the department to be dangerous to the public health exists or is likely to exist in any place within the commonwealth, the department shall make an investigation thereof and of the means of preventing the spread of the disease, and shall consult thereon with the local authorities. It shall have coordinate powers as a board of health. In every town, with the board of health thereof. It may require the officers in charge of any city or state institution, charitable institution, public or private hospital, dispensary or lying-in hospital, or any board of health, or the physicians in any town to give notice of cases of any disease declared by the said department to be dangerous to the public health. Such notice shall be given in such manner as the department may deem advisable. If any such officer, board or physician refuses or neglects to give such notice, he or they shall forfeit not less than fifty nor more than two hundred dollars.

In addition to the powers cited above, the department is authorized by law to regulate common drinking cups and towels; make free chemical analyses of paint, turpentine, and linseed oil for the commissioner of public safety; analyze intoxicating liquors; analyze drugs and poisons; supply prophylactics for ophthalmia neonatorum; make tests of animals for the division of animal industry, and report to that division unsanitary conditions at barns and stables; give advice to towns and persons on water and sewage; make rules for jails and similar institutions; and publish general information and results of analyses.

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AN ANTI-MEASLES-DIPLOCOCCUS SERUM

Preliminary Communication

BY RUTH TUNNICLIFF, M.D., AND BENJAMIN WHITE, P.H.D.*

In previous publications¹ one of us (Tunncliff) has described a small filter-passing gram-positive diplococcus isolated from the blood, eyes, nose, throat and sputum of patients with measles during the pre-eruptive and early eruptive stages. In another paper² it was reported that "anaerobic dextrose broth cultures of the green-producing diplococcus found in measles killed by 0.5% carbolic acid, appear to produce a skin reaction in persons who have not had measles, but not in measles patients after the appearance of the eruption, or in 96% of persons who give a history of measles.

The measles antigen is neutralized in persons who have not had measles, by convalescent human measles serum, but not by the serum of a person with a negative history of measles. Reaction occurs also in normal rabbits, while rabbits immunized against measles fail to react. The measles antigens are neutralized in rabbits by convalescent human measles serum and by the serum of goats recovering from the reaction produced by measles diplococci, but not by normal goat serum. Green-producing cocci from other sources generally give no reaction in rabbits, but the strains that do, produce similar reactions in both immune and in nonimmune rabbits and are not neutralized by convalescent human measles serum. Normal rabbit serum neutralizes measles antigen partly, immune rabbit serum completely neutralizes it." The conclusion was ventured that the results indicated that the gram-positive, green-producing diplococcus found in measles is of etiologic significance.

Furthermore, it was found that the blood of patients convalescing from measles contained specific agglutinins, opsonins and complement-fixing antibodies for this coccus. These data and the well known efficacy of measles convalescent serum in preventing or modifying measles led to the immunization of a goat with the hope of obtaining a serum which would contain specific immune substances against this diplococcus and be of value in the prevention of measles. It was found that a goat treated in the manner described³ yielded a serum that protected rabbits against a subsequent inoculation of infective material from measles, that it neutralized the action of killed measles diplococci when with them it was injected into the skin of normal rabbits, and that when injected on the first and second days after exposure to measles it protected human beings against measles as effectively as convalescent human measles serum. Later with Taylor⁴, one of us reported observa-

tions on an extracellular toxin produced by this green producing diplococcus, which gives a definite skin reaction in persons with a negative history of measles but not in those with a positive history, and which is neutralized by convalescent human serum and by the serum of goats immunized with measles diplococci, but not by normal goat serum.

Reports on the clinical use of this immune goat serum in measles prophylaxis have been published by Hoyne and Gasul⁵ where it is stated that the Tunncliff immune goat serum was administered to thirty-nine of forty-eight infants and children with definite exposures to measles. Of these, thirty-four were protected from measles and five developed the disease in mild form. Of the nine other exposed children not treated with serum, two failed to develop measles while seven did develop the disease and of these two died. A further report on the clinical use of this immune goat serum was made by Tunncliff and Hoyne⁶.

These laboratory and clinical findings led to an attempt to immunize a horse with this green producing diplococcus. From experience in producing immune serums it seemed desirable first to inject the animal subcutaneously with broth cultures of this organism and then, when a basal immunity was established, to inject living diplococci by the method described by Dochez⁷ for the production of anti-scarlet fever serum. On April 27, 1926, the immunization of horse No. 421 (Antitoxin and Vaccine Laboratory) was commenced. The animal was injected subcutaneously at three to seven day intervals with increasing amounts of carbolised, four day, beef infusion broth cultures of two strains of the green producing diplococcus isolated from measles cases. After twenty-two of these vaccine injections, the horse was inoculated with living diplococci by the Dochez method. In January, 1927, another freshly isolated strain was added. The injections of killed whole broth culture and living culture were then alternated and have been continued since. Bleedings were begun in July, 1926, and the serum pooled. The serum from the tenth bleeding taken in November, 1926, was tested and found to contain a large amount of opsonin, and neutralized the antigen used for skin tests both on rabbits and human subjects. It also protected mice against a fatal dose of measles diplococci. This lot given in 5 c.c. doses on the fourth day after exposure protected one child, modified the disease in another and apparently had no effect on three other children. This dose may have been inadequate. This lot was also used by Doctor Hal-

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perin at the Cook County Hospital, Chicago, on four children exposed to measles. 10 c.c. of the serum was given on the fourth day after exposure and only one child developed measles (unmodified but no complications).

The serum from subsequent bleedings (No. 3 of 7/19/26 to No. 11 of 11/12/26) was pooled and concentrated by a modified Banzhaf ammonium sulphate method. One half the batch was subjected to no heat above room temperature, while the other half was heated not above 57°. The concentrates were then processed in the usual manner. Tests on these two lots done early in February, 1927, showed the opsonic index of the heated lot to be 5.0, that of the unheated lot to be 8.0, while that of the original unconcentrated serum (unpreserved) was 6.5. The concentrated serum protected a mouse; and in a dilution of 1:20 completely and at 1:100 almost completely neutralized the measles antigen when used for intradermal test on rabbits.

This concentrated serum was used by Dr. Charles McKhann of the Children's Hospital, Boston, who has submitted the following report:

Four patients were exposed to measles for a period of forty-eight hours ending May 21, 1927. On May 25 all received measles serum (conc.) in dosage of 10 c.c. intramuscularly. Two escaped entirely;—one had mild measles fourteen days after exposure and the last had mild measles thirty days after first exposure and sixteen days after second exposure. Serum was not repeated at the time of the second exposure.

SUMMARY

In this paper the authors describe the production in the horse, of a specific immune serum by the employment of the green producing measles diplococcus of Tunnelliff. This serum has been concentrated, and when tested in both unconcentrated and concentrated states was found to contain opsonins and to produce neutralizing and protective effects specific for this diplococcus. Administered by injection to children previously exposed to measles infection, it apparently gave complete protection in a few cases, incomplete protection in some and no protection in others. Further clinical tests are being made with this concentrated serum.

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ASKS NATIONS TO HOSPITAL CONFERENCE

INVITATIONS to a preliminary conference to discuss an international hospital conference are being issued to Central and South America, Canada, Mexico, Japan and other countries which would be likely to be interested in this humanitarian project, the American Hospital Association has announced. The conference is to be held in Paris on Sept. 19.

HOW ONE WRONGLY INFORMED MAN CAN ENDANGER A WHOLE COMMUNITY

BY W. W. KEEN, M.D., PHILADELPHIA

Member Gorgas Memorial Institute; Emeritus Professor of Surgery, Jefferson Medical College

The Franco-Prussian War of 1870-71 gave rise to an epidemic of smallpox that went around the world. In 1873 it reached Philadelphia. I was then a young practitioner who had not yet specialized in surgery.

As soon as I found that smallpox was epidemic, I took my list of patients, which in those days, over a half century ago, was none too long, and started on a campaign to every patient I had ever had, saying:

"You must be vaccinated, in view of the present epidemic, unless you have been successfully vaccinated within the last five years."

I had no trouble whatever until I came to a big, burly teamster with a wife and six children. When I stated my mission he said: "All right, Doctor, vaccinate the Missus and the children, but I am not going to be vaccinated. I am not a bit afraid of smallpox. It will never attack me."

Earnestly I pleaded but he was adamant, and, accordingly, I could only vaccinate the wife and the six children. All of the vaccinations fortunately "took."

Within a week the teamster was in bed with black smallpox and in another week was in his grave. I confess I trembled for his wife and children, for the vaccination had only four days start of the smallpox. What a wonderful victory that was!

We did not, at that time, recognize the absolute necessity, as we do today, of complete segregation, and in his small tenement his wife and children went frequently into his room, and smallpox is the most contagious of all diseases.

Happily, my fears were unfounded, for not a single one of the seven fell ill with smallpox. But on the other hand the father had left no means. The family had to be broken up, the children sent to various homes. The man's obstinacy heaped onto the community the obligation of supporting and educating these children until they reached the age of self-support.

Has one obstinate, wrongly informed man the right to throw such a burden on any community, when there is such a sure, safe, and simple preventive as vaccination, as this case so clearly proves?

Three years ago in Detroit there were 124 cases of black smallpox, 123 of whom died and only one recovered. That shows how malignant black smallpox is.—From Gorgas Memorial Institute, Chicago.

**Case Records
of the
Massachusetts General Hospital**

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN
WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 13331

OBESITY AND DYSPNEA

MEDICAL DEPARTMENT

A colored automobile mechanic forty-five years old entered the hospital March 4 complaining of dyspnea. The history was given by his wife, who was very intelligent.

All his life he had been slightly dyspneic, supposedly because of his weight. Eight months before admission the dyspnea became more noticeable. For the past four months it had grown progressively worse. All his adult life until a year before admission he had had attacks of throbbing headache over one eye or the other or on top of his head, relieved and frequently averted by physic. He had sluggish fecal elimination and gas distension. For eight years his shoes had occasionally felt tight when he put them on in the morning. They soon felt normal. There was no edema at bed time. For four months this symptom had been present nearly every day and so marked that he could barely get his shoes on. Ten years before admission he began to urinate once or twice at night. Within the past year the rate had increased to five or six times. For seven years he had been obliged to strain in order to urinate, first a few drops, then a pause, then the stream. For the past two weeks the straining had "cut off his breath." The obstruction was more marked at times than at others. Four months before admission he began to have orthopnea, increasing until during the past two weeks he had slept most of the time in a chair. Four months ago he began to work intermittently. For four months the exhaust from motors had a marked effect, exhausting him. He had always been an automobile mechanic and had never complained of this before. It had been coincident with a progressive loss of endurance. For four weeks he had had cough with attacks of "asthmatic" respiratory difficulty and a moderate amount of sputum, at first whitish, then reddish brown. For three weeks he had been depressed. For a week he had been in bed and complained that he saw his wife through a veil. Twice he had vomited at night after cough, watery material following a lump of mucus from his throat. For four days his throat had been dry, hoarse and painful on swallowing. For three days his muscles had twitched, and he had

been unable to work. Twelve years before admission he weighed 289 pounds, his greatest weight; two years ago he weighed 265 pounds, a year ago about 190.

His mother died at seventy-four of kidney trouble. All his family were obese. He had always been a very large eater. His wife had had one miscarriage at four months. Three children were living and well. No details of the patient's past history were obtainable.

Clinical examination showed a man still obese in spite of loss of weight. Skin moist. Mucous membranes seemed cyanotic. Pyorrhea. Slight kyphosis. Lungs dull at both bases. A few crackles throughout the lung fields. Location of apex impulse of the heart not recorded. Left border of dullness in the sixth space 10.5 centimeters to the left of midsternum, 1.5 centimeters outside the midclavicular line, right border 2 centimeters, supracardiac dullness 6 centimeters. Loud systolic murmurs over the base and apex, transmitted over the entire precordium. A diastolic whiff to the left of the sternum. Aortic second sound markedly accentuated. Blood pressure 260/140 to 210/150. Artery walls moderately thickened and tortuous. Abdomen pendulous. Shifting dullness to flatness in flanks. Small hemorrhoidal tabs. Prostate slightly enlarged. A very doubtful coronal scar. Coarse tremor of the hands. Pitting edema of the legs, thighs and sacrum. Pupils small, the left possibly slightly irregular, their reactions and the other reflexes normal. Occasional twitching.

Amount of urine normal when recorded. A catheter specimen showed a large trace of albumin, specific gravity 1.017, sediment negative. Three other specimens showed specific gravity 1.015 to 1.026, a large trace to a trace of albumin twice, alkaline reaction once. Renal function 15 per cent. Blood: 13,400 leucocytes, 79 per cent. polynuclears, hemoglobin 80 per cent., reds 5,500,000, slight achromia, poikilocytosis and anisocytosis, a few basophilic cells, platelets increased. Wassermann not recorded. Non-protein nitrogen 60, uric acid 4.52, creatinin 2.6.

Temperature 98.4° at entrance, steadily rising to 102.1°, rectal. Pulse 80 to 106. Respirations 40 to 32.

Orders. March 4. Karell diet plus cracked ice. Morphine sulphate 1/6 grain every three hours p.r.n. for restlessness. Magnesium sulphate one ounce each morning with three ounces of water. Digifolin two ampules (three grains) intramuscularly twice a day. For acute dyspnea or substernal pain nitroglycerin 1/100 grain under tongue every five minutes p.r.n. Special care to mouth. March 5. Erythrol tetranitrate half a grain t.i.d. If still restless after morphia, with the next dose give scopolamin grain 1/150 s.c. This may be given with morphia three times in twenty-four hours at intervals not less than six hours. Force fluids with milk after vene-

section. If patient will not drink call house officer early for subpectoral. Caffein sodium salicylate 10 grains. March 6. Digifolin two ampules. Morphia and scopolamin as on March 5. March 7. Try paraldehyde one dram by mouth or two drams by rectum in place of next narcotic. If ineffectual within an hour, resume narcosis. For collapse caffein ten grains intramuscularly every hour p.r.n. Paraldehyde as above every three hours p.r.n. Use this in preference to morphia and scopolamin.

The patient showed marked Cheyne-Stokes and orthopnea from entrance, and was delirious at times. Venesection somewhat relieved the pulmonary edema and orthopnea. The night of March 6 he required constant watching. Morphia seemed only to excite him. Paraldehyde was effectual in quieting him. The heart sounds were loud, but of tic-tac quality. March 7 he suddenly died.

DISCUSSION

BY RICHARD C. CABOT, M.D.

NOTES ON THE HISTORY

1. "No edema at bed time" is an interesting point. The ordinary behavior of edema is to go down during sleep at night, so that it is absent in the morning, and then gradually to accumulate as the person spends his time in the upright position. But we also see patients who start with some edema in the morning and work it off during the day. I do not know what that means. I have cross-questioned patients because I thought at first they were certainly wrong about it; then I have watched the edema actually go off with exercise.

2. He began to have nycturia when he was thirty-seven, too young for a prostatic obstruction. It makes us suspect kidney disease, but it may be due to simple passive congestion of the kidney. Later however we see that there is obviously some local cause. If it is not prostate it is very like it.

3. He had dim vision.

4. What kind of heart trouble are we expecting? I am looking for hypertensive heart trouble.

NOTES ON THE PHYSICAL EXAMINATION

1. I am expecting a big heart here, bigger than the percussion measurements seem to show.

2. "A diastolic whiff to the left of the sternum." Undoubtedly they have in mind the Graham Steele murmur.

3. We are interested in the kidney because of the marked nycturia. He has no fixation of gravity. This examination shows normal kidneys so far.

4. He has no anemia, yet the cells quantitatively are those of a marrow that is working overtime, and that is queer.

5. A non-protein nitrogen of 60 is high but of no great importance. The uric acid and creatinin, especially the creatinin, are rather high.

6. Karell diet means a very small quantity of milk and nothing else. Practically we cannot carry it out because patients rebel.

DIFFERENTIAL DIAGNOSIS

He died of hypertensive heart trouble, with a hypertrophied and dilated heart, with some but not marked arteriosclerosis I think, which his kidneys share. I think his kidney function is somewhat diminished, but I doubt whether this goes so far that Dr. Mallory will call it nephritis. I should be sure about that but for the high creatinin and uric acid. On the whole I think the kidneys will be quite normal, or essentially normal, with some arteriosclerotic changes.

It is an interesting question whether the pulmonary artery will show any change. The whiff along the edge of the sternum suggested that. There are no X-rays, so we cannot do anything towards verifying the hypothesis.

A PHYSICIAN: On what do you base your diagnosis of arteriosclerosis?

DR. CABOT: Merely on the fact that a person who has had evidence of some sort of heart trouble as long as he has, and some hypertension, almost always develops arteriosclerosis; I think this comes as a result, a compensation for the strain put on the arteries.

A PHYSICIAN: He had a coronal sear, and he came of a race where we should certainly want to rule out syphilis.

DR. CABOT: That is true; but there is no Wassermann reported. We know that in the colored race syphilis and syphilitic aortitis are common. We have a diastolic murmur. We have nothing said about a Corrigan pulse. If he has a syphilitic valvular disease he has to have aortic regurgitation. There is no other cardiac lesion he can have with that trouble. At one time he had a pretty big pulse pressure, but nothing more than we should expect with such a high systolic. A diastolic pressure of 150 or 140 I think is enough to exclude free aortic regurgitation, which is what we expect with syphilitic aortitis. It is unfortunate that we did not get a Wassermann test. I cannot imagine why not.

A PHYSICIAN: His urinary symptoms might be early tabetic symptoms.

DR. CABOT: Tabes is very rare among negroes. They get syphilis, but they do not often get tabes. The reflexes are normal here. I should think it was pretty safe to say this is not a tabetic bladder.

I should suppose he had a prostate, although he seems very young for it. He perfectly well may have had a stricture. He cannot have both, because we find either one or the other. I think it is a good suggestion that as he is rather young

for prostate it is a stricture. But in spite of these suggestions I believe that it is not syphilis but pure hypertensive trouble.

A PHYSICIAN: If it were syphilitic would you not find evidence in the post-mortem?

DR. CABOT: Yes, if it is syphilis we should find evidence of aortitis. Here we are dealing with heart disease. Syphilis commonly causes heart disease in one known way only, and that is aortic regurgitation, from syphilitic aortitis demonstrable in the aorta. I do not believe he has it. I see the possibility but I am voting against it.

A PHYSICIAN: Can't there be aneurysm and no regurgitation?

DR. CABOT: Yes, but one cannot die of it without pain and pressure symptoms.

A PHYSICIAN: He is getting nitroglycerin.

DR. CABOT: Yes, I saw that, but it was not mentioned in his history.

A PHYSICIAN: He seemed to get a number of medications for precordial symptoms.

DR. CABOT: I am for hypertensive and against syphilitic.

A PHYSICIAN: They do not mention any sugar test on the urine.

DR. CABOT: It was negative. I am voting against nephritis. It is not a clear-cut case. I see the possibility with those high retention products.

A PHYSICIAN: Do you mean parenchymatous nephritis?

DR. CABOT: I mean arteriosclerotic nephritis.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Chronic nephritis.
Hypertension.
Hypertensive heart disease.
Congestive failure.
Luetic heart disease?

DR. RICHARD C. CABOT'S DIAGNOSIS

Hypertensive heart disease.
Hypertrophy and dilatation of the heart.
Arteriosclerosis.

ANATOMIC DIAGNOSES

1. *Primary fatal lesion.*

(Hypertensive heart disease.) Hypertrophy and dilatation of the heart. Chronic fibrous myocarditis.

2. *Secondary or terminal lesions.*

Chronic passive congestion.
Cystitis cystica.
Intracapillary glomerulonephritis (slight).

DR. MALLORY: The most interesting finding here was the heart, which was enormous, weighing 935 grams, almost a kilogram. The mitral valve was very slightly affected; otherwise the valves were all negative. The coronary arteries

showed a few yellowish plaques of calcification, but their lumina were of normal size. The myocardium showed very numerous little patches of sclerosis. Neither the aortic valve nor the remainder of the aorta showed any evidence of syphilis.

The kidneys we cannot be quite so definite about. They weighed 305 grams. That is a little bit small for a very big man. The capsules stripped pretty easily, leaving a yellow granular surface. The cortex averaged about seven millimeters, which is practically normal. Microscopic examination showed a few sclerosed glomeruli, and in some others there was quite definite thickening of the endothelium of the capillary tufts. I should say they were essentially normal kidneys except for a very slight acute nephritis which was probably terminal.

His prostate in gross seemed about normal size, but cross sections showed numerous definite cysts. The normal prostate is pretty homogeneous in character. Microscopic examination showed a considerable degree of chronic inflammation.

On the other hand his urinary symptoms, I think, were not caused by that but by a relatively uncommon bladder disease called cystitis cystica. It is a peculiar condition of the bladder, occasionally of the ureters, occasionally of the pelvis of the kidney. Beneath the mucous membrane, which in all these organs is a rather low stratified squamous epithelium, there is a formation of small cysts with walls three to four cells deep. In gross these can be seen as slight pinpoint whitish nodules in the mucosa. In this man there was an area about four centimeters over the trigone and the surrounding portions, also extending down into the first portion of the urethra, where the mucosa was greatly thickened, perhaps two to three millimeters, congested and rather shaggy, with these minute granules in it.

DR. CABOT: Taking the body as a whole, how much arteriosclerosis was there?

DR. MALLORY: A relatively moderate degree, but more than a man of forty-five should have,—not at all however what I should call a severe arteriosclerosis.

A PHYSICIAN: What were the scars on the heart?

DR. MALLORY: Those probably represent induration due to closure of very minute branches of the coronary arteries, not of any of the large ones. That is a condition that very frequently goes with hypertensive heart disease.

CASE 13332

TUMOR OF THE RIGHT LOIN

SURGICAL DEPARTMENT

AN unmarried Irish nurse forty-five years old entered the hospital November 23 complaining of swelling in the right upper quadrant.

Three weeks before admission she had a sense of pressure and pain in the right upper quadrant on getting up. She caught at her side and noticed a swelling. As soon as she moved the pain radiated through to her back like a knife. She applied a porous plaster which relieved the pain.

belching, so that she had taken only liquids for three weeks.

Her mother died of apoplexy. There was no other history of familial disease.

The patient had always been well and strong. Eighteen years before admission she was laid up



PLATE I. Barium enema. The course of the transverse colon, running obliquely downward toward the right, is definitely abnormal.

Her bowels had been constipated since the onset. For the first day or two her stools were black. She had no jaundice and no more attacks of pain, only swelling and a sense of pressure in the right upper quadrant. For the first forty-eight hours the whole right side of the abdomen was swollen. All food caused much gas and

in bed ten days with a sprained back. Her menstruations stopped from July, four months before admission, until the week of admission, when she had flowing for two days and a half. She had done graduate nursing for seventeen years. During the past year she had lost sixty pounds and had felt worn out most of the time.

Clinical examination showed a well nourished woman lying comfortably in bed. The head, throat and heart were normal. The breath sounds were essentially normal except for diminution at the right base posteriorly, where there were also a few crepitant and moist râles and dullness beginning two fingerbreadths above the point where it normally begins. The left chest was normal. The abdomen was full. A visible mass occupied the right upper quadrant, moving only slightly on deep inspiration and apparently separated from the liver by a groove, although the percussion note from the fifth rib to the umbilicus, about 13 centimeters below the costal margin, was flat all the way. The mass was round, hard, firm, somewhat nodular, slightly tender, and extended down into the flank. There was considerable tenderness just above the symphysis, but no mass. In the left flank there was shifting dullness suggesting some free fluid. There was right indirect inguinal hernia. Pelvic examination could not be done, as the hymen did not admit the examining finger. Rectal examination was negative except for small hemorrhoidal tabs. There was a furuncle over the sacrum on the right. There was irregularity of the pupils. All the reflexes were hyperactive.

Before operation amount of urine not recorded, specific gravity 1.020, alkaline at one of two examinations, rare leucocytes once, no albumin, sugar or bile. Blood: 10,600 leucocytes, 72 per cent. polynuclears, hemoglobin 90 per cent., reds 4,288,000, slight anisocytosis, platelets normal. Wassermann negative. Icterus index 4. Stools: guaiac negative at both of two examinations, bile present once.

X-ray examination with a barium enema showed no evidence of organic disease of the colon. There was however definite abnormality in its course. The splenic flexure was in the usual position, but from that region the transverse colon ran obliquely downward toward the right. The cecum lay within the pelvis. The spine and chest were negative. There was an area of increased density in the right chest wall and haziness in the costophrenic angle. The diaphragm on both sides was high, but there was no limitation of respiratory motion. The heart shadow was not remarkable. The plate was unsatisfactory.

Before operation the chart is not remarkable.

The non-protein nitrogen was reported November 26 as 35 milligrams. This was believed to be an error. A second examination November 29 showed it to be 39 milligrams.

December 2 operation was done. The patient reacted well after it and made an excellent convalescence, with an absolutely normal chart. December 15 all the stitches were out. December 20 she was discharged in excellent condition, with the wound well healed.

An examination made April 25, four months later, showed the abdomen soft, with no masses

or tenderness and no herniae. Except for some gas she had no abdominal symptoms. She complained of shortness of breath and pain about the heart of a month's duration.

DISCUSSION

BY CHARLES ALLEN PORTER, M.D.

In the history of this case there are several important things to note. 1) That a trained nurse did not know until three weeks before admission that she had such a large tumor in the right side. With the stabbing pain, but without nausea and vomiting, one might think of an acute hydronephrosis caused by an impacted stone, but the tumor is too large to have occurred in three weeks from this cause. 2) She spoke of black stools for two days, but no blood was found in the stools while in the hospital, so the blackness may have been due to some other cause. 3) A loss of sixty pounds in a year in a woman of forty-five with a large tumor on the right side would suggest that it was probably malignant. But no blood was ever found in the urine; her hemoglobin was 90, and her red cells about four million and a quarter. The almost normal blood is not at all consistent with a malignant tumor causing such a marked loss of weight.

The X-rays show that the tumor pressed the transverse colon down and the descending colon and cecum toward the median line—evidently a retroperitoneal tumor, which is quite consistent with the physical examination. The pyelogram shows a definite deformity of the pelvis, which is also much elongated. Though three weeks before admission the pain may have been caused by a slight hydronephrosis due to a kink or something, there was certainly none present at the time of operation. The diagnosis, therefore, rests between a hypernephroma, which is unlikely for the reasons given, and a cyst of the kidney.

I prefer to make a transverse incision below the right rib margin where a malignant growth of the kidney is suspected. In this way the peritoneum can be separated well to the median line and the renal vein clamped before any attempt is made to free the kidney; for fragments of tumor tissue often project into the vein, and unless this has been previously ligated may be forced into the circulation.

X-RAY NOVEMBER 25

Plates of the kidney region showed a shadow which had the general position of the kidney and which occupied the greater part of the right side of the abdomen. There was a small shadow of increased density between the 11th and 12th ribs, probably an artefact.

INTERPRETATIONS OF X-RAYS NOVEMBER 23 AND 25

Barium enema. The findings are those of a mass displacing the transverse colon and cecum.



PLATE II. Pyelogram. Shows marked deformity of the right kidney pelvis, chiefly in its lower portion, where the calyx is much elongated, while the upper calices are more or less blunted.

Chest. The variation from the normal at the right base is probably due to the compression of the lower lobe from high diaphragm.

CYSTOSCOPY NOVEMBER 26

Cystoscopy was done for the purpose of ruling out or confirming the diagnosis of hypernephroma.

PYELOGRAM

A pyelogram (see Plate II) showed marked deformity of the right kidney pelvis, chiefly in its lower portion, where the calyx was much elongated, while the upper calices were more or less blunted. The urologist thought that cysts of the kidney were possible, but hypernephroma much more probable. "If X-ray showed metastases or stool examination showed blood (there is a story of black stools) then the diagnosis would be definitely hypernephroma."

REPORT OF SECOND UROLOGICAL CONSULTANT

"I think the evidence points to neoplasm of the kidney. While not very movable I believe it could be removed, depending on what X-ray shows as to metastases. If these are present I should advise against operation."

X-RAY DECEMBER 2

Films of the long bones and skull showed no evidence of metastases. The chest findings confirmed the previous observations.—bilateral high diaphragm, a little haziness of the right costophrenic angle.

PRE-OPERATIVE DIAGNOSIS

Hypernephroma.

OPERATION

Gas-ether. A transverse incision was made from the midline under the right costal margin to the midaxillary line. The peritoneum was reflected forward from a large tumor which was obviously chiefly cystic. So much of the kidney had been destroyed and pushed back by the growth that it was decided to do a nephrectomy. The vessels were clamped and tied with continuous catgut, the peritoneum placed in as nearly normal position as possible and the wound sutured without drainage.

PATHOLOGICAL REPORT

A large cystic tumor about the size of a child's head measuring 20 centimeters in greatest diameter. The kidney was compressed at one pole and was distinctly separate from it. On section the cyst was composed of many small chambers varying in size from a pea to an English walnut, with a fine fibrous stroma. The cysts formed a honeycomb-like structure and were filled with clear fluid. The kidney was small but not other-

wise noteworthy. The pelvis and ureter were compressed and dilated.

On microscopic examination the cysts were lined by single layers of cuboidal to flat epithelium. They were separated by a fibrous connective tissue which was supplied with abundant blood vessels.

Multilocular cystadenoma.

FURTHER DISCUSSION

Exploration showed that the tumor consisted of a number of large cysts and that there was a good deal of normal kidney. Owing to the deformity of the pelvis and the dangers of a partial nephrectomy I decided to remove the whole mass with the kidney. She made a normal convalescence, and was discharged on the twentieth day.

During the following months she had several attacks of mild intestinal obstruction, due possibly to adhesions. She telephoned to me today, June 16, that she is now very well, having gained thirteen pounds in the past two months.

DIAGNOSIS

Cystadenoma of the right kidney.

PERMANENT INTERNATIONAL COMMITTEE ON OCCUPATIONAL DISEASES

The Permanent International Committee on Occupational Diseases has just instructed its members of French nationality to organize the 4th International Session, which will take place at Lyons from April 3-6, 1929.

The questions on the agenda are as follows:

1. Silicosis (three reports: etiology, clinics and legislation); a general report dealing with forms of pneumoconiosis.
2. Cataract of occupational origin (two reports: etiology and clinics).
3. Endocrine system and forms of poisoning (it is intended to furnish under this heading a single report to be entrusted to three experts).
4. Communications relating to results of inquiries so far unpublished.

Finally if it is found advisable to include another question on the agenda the subject chosen will be the problem of occupational disease statistics.

Professor Etienne Martin, of the Institute of Legal Medicine of Lyons, in collaboration with Professors Agasse-Lafont and Kohn-Abrest of Paris, with the approval of the executive will designate the experts selected to present reports on the subjects before the session.

Requests for all further information should be addressed to Monsieur le Prof. Etienne Martin, or to the Secretariat of the Committee, Hygiene Service, International Labour Office, Geneva.

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FIFTY YEARS OF THE ADAMS NERVINE

THE Adams Nervine Asylum, Jamaica Plain, was incorporated fifty years ago, although patients were not received in the hospital until 1888. The hospital was founded by the will of Seth Adams, who died December 7, 1873, "for the benefit of such indigent, debilitated, nervous people, who are not insane, inhabitants of the Commonwealth of Massachusetts, as may be in need of the benefit of a curative institution." The founder apparently desired to help people suffering from the psychoneuroses, especially those who ought to be benefited by "personal care" in an institution. Such "personal care" the Adams Nervine has given very successfully for over half a century to a small portion of this large group.

Last year there were one hundred and seventy-seven admissions, and one hundred and twelve patients were discharged as recovered or relieved. Certain of those who were not relieved were transferred to chronic hospitals on account of suffering from serious organic disease, and, therefore, not being suitable for care in the Adams Nervine.

The Resident Physician points out in his annual report for 1927 the method used for the

successful treatment of these patients. He feels that it is absolutely necessary for this type of patient to live in a hospital where a detailed "sympathetic inquiry could be carried out over a period of a number of weeks. Such a study is impossible in the busy out-patient clinic of a hospital where the physician is asked to advise a score or more in a half-day. Here an individual study is made, and personal advice and encouragement is given. No attempt is made to give advice to groups. So far as we may, we aim to avoid the atmosphere of a hospital. The results in the past have demonstrated that residence of a few months is really necessary for the more severe cases."

Owing to the funds available, it is interesting to note that twenty-five per cent of the patients treated last year were given care in free beds, and that fifty-nine per cent more paid less than their cost. The average weekly payment of all the patients was \$27.00, while the average weekly cost was over \$40.00.

Many changes have taken place in psychiatry in the last fifty years, but the sympathetic care of the patients at the Adams Nervine has not changed. Nothing has been substituted, or can be substituted for this type of treatment. In spite of the abominable name of the hospital, "The Adams Nervine Asylum," and its unattractive external architecture, the institute goes on, keeping well abreast of the times. Its interior equipment is excellent, and Massachusetts should be proud of such an institution as that contributed to the Commonwealth by Seth Adams.

SHALL THE STATE FURNISH CALOMEL OINTMENT FOR THE PREVENTION OF SYPHILIS?

The *Independent* of June 25, 1927, publishes a letter from the Massachusetts Commissioner of Health in which the aid of the *Independent* and possibly its readers is sought in determining the function of the State Department of Health with respect to the prevention of syphilis. The Commissioner contends that "next to the common cold and its complications there is perhaps more economic loss annually from the venereal diseases than from any of the other communicable diseases" and further that venereal diseases "are possibly increasing."

The Commissioner refers to the prophylactic use of calomel ointment during the late war which was supposed to be effective up to 95 or 98 per cent. in controlling venereal infections. This, however, has been disputed. With these statements as a basis the Commissioner wants advice as to the moral and social aspects of the distribution of free calomel ointment to those who are inclined to cohabit with those who may be syphilitic.

The specific question is as follows: "Why then

should not the State distribute it free of charge, as it distributes vaccine virus for smallpox?" We cannot see the logic of the comparison because smallpox may be contracted without the knowledge of a possible exposure or any deviation from recognized standards of conduct endorsed by the preponderance of the people. Smallpox may invade a community like a thief in the night with no warning signals and the victim is innocent of any infraction of the rules of good behavior. The State can protect from this danger, which is a community as well as personal affliction and it also does with reference to typhoid and diphtheria when permitted.

The Commissioner may argue that syphilis is a peril to the innocent wife but the extension is usually more definitely through one person to one other person and that abstinence would check its spread more than would calomel ointment. If the State enters upon this program why limit it to calomel ointment? Why not include the free distribution of mechanical devices? Many would prefer a condom to the ointment.

We believe strongly in the dissemination of literature which will explain the dangers of promiscuous coition, and if necessary the record of the requirements of reporting exposure among the soldiers. If the time ever comes when the State cares to attack the problem of venereal disease with any degree of efficiency, let it be by more extensive prophylactic education and more radical control of the diseased person. Why attempt repressive measures with the typhoid carrier and let the syphilitic man or woman sow the seeds of the disease upon innocent members of society? There seems to be no real difficulty in the control of the individual leper. Why not deal with the syphilitic in the same way?

If a man wants to take a chance with syphilis let him buy his own calomel ointment. He will be more apt to use it if he pays for it. Does our honored Commissioner really believe that many persons will apply for free calomel ointment?

If there are any convincing arguments in favor of State distribution of free calomel ointment they have not come to our attention.

A NEW PROFESSION FOR YOUNG WOMEN

FEW members of the Medical Profession realize the present status of Occupational Therapy. Only a few years ago it was comparatively unknown and today it is firmly established and recognized as a necessary adjunct to Medical Treatment in many of our institutions throughout the country. The success of a recent campaign conducted by the Boston School of Occupational Therapy has substantiated the confidence and belief of the public in this work. Aside from occasional articles and a casual contact with the institutions employing Occupational Therapists, the Physician in his busy life

has had little time to appreciate its value in the treatment of his patients.

The demand for Therapists throughout the country has become so great that it is impossible to fill them for the want of properly trained individuals. This work offers eighteen months of training with a remunerative consideration at the termination of the course on a par with many other professions. As this work is essentially Medical in all of its aspects this is entered as a possible appeal to the Doctors to make known this opportunity for a future vocation to the young women in their communities.

All who desire detailed information may address communications to Miss Marjorie B. Greene, Dean of the Boston School of Occupational Therapy, 7 Harcourt Street, Boston, Mass.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

CLUTE, HOWARD M., B.S.; M.D. Dartmouth, 1914; F.A.C.S.; Assistant Surgeon, New England Deaconess Hospital and the New England Baptist Hospital. Address: 605 Commonwealth Avenue, Boston. Associated with him is

MASON, ROBERT L., B.S.; M.D. Harvard 1922. They write on "Iodin as a Therapeutic Aid to Surgery in Primary Hyperthyroidism." Page 247. Address: 605 Commonwealth Avenue, Boston.

PAINTER, CHARLES F., A.B.; M.D. Harvard Medical School 1894; Professor of the History of Medicine, Tufts College Medical School; Associate in the Graduate Department of Orthopedics at the Harvard Medical School. His subject is: "Shoeing Problems and the Human Foot." Page 254. Address: 520 Commonwealth Avenue, Boston.

GALLUPE, H. QUIMBY, B.S.; M.D. Harvard 1918; F.A.C.S.; Assistant Surgeon Waltham Hospital, Waltham. His subject is: "The Obstructing Prostate." Page 258. Address: 751 Main Street, Waltham.

HURLEY, WILLIAM R., M.D. Tufts College Medical School 1916; F.A.C.S.; Formerly Resident Surgeon, East Boston Relief Station and Chief Surgeon, Fore River Plant Hospitals; Now Visiting Surgeon, Quincy City Hospital; Surgeon, Out-Patient Department, Carney Hospital. His subject is: "Subfascial Hemorrhage of the Thigh." Page 261. Address: 276 Commonwealth Avenue, Boston.

JOHNSON, LEIGHTON F., M.D. Boston University School of Medicine, 1915; Instructor in Laryngology and Applied Anatomy, Boston University School of Medicine; Assistant Surgeon, Massachusetts Homeopathic Hospital; Consultant in Laryngology, Evans Memorial;

Consultant in Oto-Laryngology, Westboro State Hospital, Canton Hospital School and Norwood Hospital. His subject is: "Results of One Year's Bronchoscopic Study." Page 263. Address: 15 Bay State Road, Boston.

O'HARA, DWIGHT, B.S.; M.D. Harvard Medical School 1919; Physician for Contagious Diseases, Waltham Hospital; Junior Visiting Physician, Boston City Hospital; Lecturer on Therapeutics and Instructor in Clinical Medicine, Boston University School of Medicine; Assistant in Medicine, Harvard Medical School. His subject is: "Rumination of an Out-Patient Physician." Page 264. Address: 751 Main Street, Waltham.

TOBEY, JAMES A., B.S.; LL.B.; M.S.; Dr.P.H.; Lecturer on Public Health Law, Massachusetts Institute of Technology; Harvard University School of Public Health; Scientific Consultant, Borden Co., New York. His subject is: "Public Health Administration in Massachusetts." Page 266. Address: 350 Madison Avenue, New York, N. Y.

TUNNICLIFF, RUTH, A.B.; M.D. Rush Medical College of 1903; Research Worker, John McCormick Institute for Infectious Diseases. Member Chicago Institute of Medicine, Chicago Pathological Society, Society of Immunologists, American Association of Pathologists and Bacteriologists and the Society of American Bacteriologists. Address: 637 S. Wood Street, Chicago. Associated with her is

WHITE, BENJAMIN, Ph.B., Ph.D. Director Division of Biologic Laboratories, Department of Public Health, Commonwealth of Massachusetts. Assistant Professor of Bacteriology, Immunology and Preventive Medicine, Harvard School of Medicine and Harvard School of Public Health. Honorary Member of Massachusetts Medical Society and Fellow of the American Academy of Arts and Sciences. Their subject is: "An Anti-Measles-Diplococcus Serum." Page 272. Address: 375 South Street, Jamaica Plain.

MISCELLANY

RESUME OF COMMUNICABLE DISEASES FOR MASSACHUSETTS

JULY, 1927

GENERAL PREVALENCE

Disease prevalence for July was "normal."

More cases of lobar pneumonia, scarlet fever, mumps and chickenpox were reported in July, 1927, than in any previous July in the history of the Department. The incidence of poliomyelitis and pulmonary tuberculosis was somewhat higher for the month than expected.

Diphtheria and influenza incidence was "normal." Measles cases reported still indicate a low prevalence, but the rate is rapidly approaching "normal."

Fewer cases of non-pulmonary tuberculosis were reported than in any July since 1922. For the third

successive month a new low monthly record has been established for typhoid fever. A new low record for the year may be reasonably expected. The incidence of whooping cough and German measles has been low.

RARE DISEASES

Anterior poliomyelitis was reported from Boston, 5; Brockton, 1; Cambridge, 1; Easton, 1; Haverhill, 1; Hingham, 1; Lawrence, 2; Longmeadow, 2; Lynn, 1; Quincy, 1; Springfield, 1; Taunton, 1; Watertown, 4; Westport, 1; total, 23.

Anthrax was reported from Haverhill, 1.

Dog-bite requiring anti-rabic treatment was reported from Arlington, 1; Boston, 3; Cambridge, 2; Chelmsford, 4; Danvers, 2; Everett, 2; Fall River, 3; Holyoke, 1; Lowell, 8; Natick, 6; Peabody, 2; Quincy, 3; Revere, 9; Salem, 1; Springfield, 1; Winthrop, 5; total, 53.

Dysentery was reported from Worcester, 1.

Encephalitis lethargica was reported from Fall River, 1; Northampton, 2; Peabody, 1; Waltham, 1; Worcester, 1; total, 6.

Epidemic cerebrospinal meningitis was reported from Boston, 1; Chelsea, 1; Groveland, 1; Pittsfield, 1; total, 4.

Malaria was reported from Brockton, 1.

Pellagra was reported from Boston, 2.

Septic sore throat was reported from Amherst, 1; Boston, 5; Chelmsford, 1; Quincy, 1; Spencer, 1; total, 9.

Tetanus was reported from Greenfield, 1; Lynn, 1; New Bedford, 1; total, 3.

A BRIEF STATEMENT AS TO THE METHOD OF DERIVING THE PROSODEMIC AND EPIDEMIC INDICES*

BY FILIP C. FORSBECK, M.D., HERBERT L. LOMBARD, M.D., AND CARL R. DOERING, M.D.

These notes are written for the purpose of giving the reader an understanding of how disease incidence is compared with disease expectancy in the reports of the Massachusetts Department of Public Health. In a future number of another JOURNAL the procedure will be fully described with mathematical formulae, etc. In brief, the steps in the development of the indices are as follows:

1. Knowing the death rates and fatality rates of a given disease for a number of years, the most probable rates for the current year are determined by extrapolation of trends.
2. Knowing the probable death and fatality rates for the current year, the probable incidence for the year is determined by formula:

$$\text{Mortality Rate} \times \text{Population} \\ 1,000 \times \text{Fatality Rate}$$

3. By studying the relative incidence of a disease by months, for the past seven years, the percentage of the yearly incidence which may be expected to occur in a given month is estimated. (The median incidence of the corresponding months for the seven years.)

4. The determined percentage of cases expected in a given month is applied to the expected yearly incidence to obtain the expected monthly incidence. This latter figure we have named the Prosodemic Index. (The term "Prosodemic" was first proposed by Professor Sedgwick as a substitute for "Endemic." It indicates a condition inherent in the people as contrasted with something from time to time superimposed on them.) This Index is the number of cases which, from examination of the incidence of other years, seems most likely to occur.

5. The actual incidence of cases is compared with the Prosodemic Index. (That is, the incidence is

*From the Massachusetts Department of Public Health.

MONTHLY REPORT OF CERTAIN COMMUNICABLE DISEASES

Diseases	Cases in entire population				Case rates per 100,000 population		
	July, 1927	July, 1926	Prosodemic index	Epidemic index	July, 1927	July, 1926	Expected rate†
All causes	4,561	4,766	—	—	106.8	113.1	—
Anterior poliomyelitis	23	21	18*	1.3‡	.5	.5	.4
Diphtheria	264	174	273*	.9†	6.2	4.1	6.4
Measles	1,023	917	1,368*	.7†	24.2	21.7	32.0
Pneumonia, lobar	154	136	98*	1.6†	3.6	3.2	2.3
Scarlet fever	643	628	343*	1.9†	15.1	14.9	8.0
Tuberculosis, pulmonary	439	494	336*	1.3†	10.3	11.7	7.9
Typhoid fever	34	46	47*	.7†	.8	1.1	1.1
Whooping cough	360	599	656*	.5†	8.4	14.2	15.4
Chickenpox	423	364	—	—	9.9	8.6	—
German measles	50	190	—	—	1.2	4.5	—
Influenza	11	9	—	—	.2	.2	—
Mumps	338	242	—	—	7.9	5.7	—
Tuberculosis, other forms	63	65	—	—	1.6	1.5	—

*This index is an attempt to estimate the number of cases based on the trend during the past years which can be expected to occur, and is for the purpose of comparison with the number of cases which actually did occur.

†This ratio expresses how prevalent the disease is compared with the index mentioned above; 1.0 indicates that the actual number of cases equals the expected number. A larger number means a greater prevalence, and a smaller number a lesser prevalence than expected. Thus, 2.0 would indicate twice the expected number of cases, and .5 half the expected number of cases. The methods used to determine the indices are described in this issue of the JOURNAL.

‡Calculated from the Prosodemic Index.

divided by the Prosodemic Index, or expected incidence, to obtain the Epidemic Index.) The resulting number, therefore, expresses the ratio between incidence and expectancy.

RECENT DEATH

LEONARD WOOD, M.D.

THE JOURNAL chronicles with deep regret the death of General Wood, at the Peter Bent Brigham Hospital, Boston, August 6, 1927, following an operation for the removal of a brain tumor. Dr. Wood had been under an operation of a similar character 17 years previously, but few knew about it and the General had carried on his arduous labors for the public in spite of a handicap that would have made many a man powerless.

Dr. Wood was a native of Winchester, N. H., where he was born October 9, 1860, the son of Charles Jewett and Caroline E. Hager Wood. His education was obtained at Pierce Academy, Middleborough, Mass., and at Harvard Medical School, where he received an M.D., in 1884. Two years after graduation he was appointed assistant surgeon in the United States Army, advancing to the rank of captain in 1891. He was commanding colonel of the First United States Volunteer Cavalry (Rough Riders) in the Spanish War, and was made brigadier general on July 8, 1898, for services at Las Guasimas and San Juan Hill. Later he became major general.

He rendered signal service as an administrator while in Cuba—among other things, clearing up the unsanitary status of the island—acting as military governor from December, 1899, until the transfer of the government to the Cuban Republic, May 20, 1902. Probably his work in Cuba was his greatest achievement, for he showed rare good judgment in handling the affairs of Cuba in a time of greatly unsettled public feeling, when foreign governments were suspicious of the intentions of the United States as regards turning over the island to its own people.

General Wood was in the Philippine Islands from 1903 until 1908 as Governor of the Moro Province and as commander of the Philippine Division. In the following year he was commander of the Department of the East; again from 1914 to 1917, and chief of staff of the army from 1910 to 1914.

He was a candidate for the Presidency of the

United States on the Republican ticket in 1920, all his friends in the medical profession rallying to his support, for they were proud of a medical man who had made such a brilliant record as an army administrator and felt that he ought to go to a higher administrative office.

In 1921 General Wood retired from the army service at his own request and was appointed Governor General of the Philippine Islands, a position he held at the time of his death. Here he added to the laurels already won in other fields, giving the islands an exemplary government and meeting the Filipino extremists with wise moderation. Even Aguinaldo admitted that Wood had been an efficient Governor. He helped along the splendid government medical establishment in Manila, as would be expected from one of his medical antecedents. He was on a brief vacation in Massachusetts when the end came.

General Wood belonged to a large number of societies, both military and lay; in 1922 he was elected an honorary member of the Massachusetts Medical Society; he had the Distinguished Service Medal for services during the World War, also the Roosevelt Medal of Honor. He held honorary degrees from numerous universities and countries.

In 1890 Dr. Wood married Louisa A. Condit Smith of Washington, D. C. They had three children: Leonard, Osborne Cutler and Louise Barbara.

CORRESPONDENCE

THE REPLY OF DR. GEORGE H. BIGELOW, COMMISSIONER OF HEALTH, TO THE OBJECTIONS TO THE DISTRIBUTION OF CALOMEL OINTMENT BY THE STATE DEPARTMENT OF PUBLIC HEALTH

The Commonwealth of Massachusetts
Department of Public Health

State House, Boston, August 4, 1927.

Editor, Boston Medical and Surgical Journal:

Thank you for your courtesy in sending me a copy of your editorial comment on my recent letter to *The Independent* asking opinions as to what should be the attitude of official health agencies toward venereal prophylaxis should an effective method be presented. My letter was crudely expressed, and

some seem to have drawn the conclusion that I support calomel ointment as such a prophylaxis of proven worth. I have heard statements for and against its efficacy, but hold no brief for it and mentioned it only as an example. It would have been wiser to have omitted any reference to a specific measure.

Perhaps my point can best be made as follows: In typhoid control our efforts can be classed under four headings: (1) Control of cases; (2) control of carriers; (3) control of modes of spread by milk, water, green vegetables, etc.; and (4) immunization of susceptibles by prophylactic inoculations. By analogy control measures for venereal disease may be classed under four headings: (1) Control of cases by reporting, maintaining under treatment until non-communicable at least, hospitalization, etc.; (2) control of the sources of infection by bringing them under treatment, police supervision and the like; (3) control of the mode of spread through education as to continence, etc.; and (4) individual prophylaxis. Under the first three headings most official health organizations are at least going through some sort of motions. But under the fourth there is generally a blind spot. If there is a reasonably effective prophylaxis, is this blindness dictated by wisdom or a desire for peace at any price?

You speak of smallpox as invading "like a thief in the night" but imply that one is exposed to syphilis "usually" with one's eyes open. I am told that two recent accidents on one of our large railroads were the result of central nervous system syphilis in the engineers. Were those maimed and killed in these accidents exposed to the menace from syphilis with their eyes open? You ask that we handle the syphilitic as we handle the leper. Heaven forbid! Of all barbarities, our methods of leper handling are perhaps the most flagrant. Could not your argument about greater appreciation of a product for which we must pay apply equally to vaccine virus, toxin-antitoxin and triple typhoid vaccine?

If there is a reasonable doubt as to whether in our present state of knowledge there is an effective prophylaxis against these diseases, that is a sound reason for our leaving the matter alone. But if this reason is removed, I hesitate to think of the absurdities to which some of us health officers will go to rationalize a comfortable inactivity.

Yours truly,

GEORGE H. BIGELOW, M.D.,
Commissioner of Public Health.

ARTICLES APPROVED BY THE COUNCIL ON PHARMACY AND CHEMISTRY

American Medical Association
Council on Pharmacy and Chemistry
535 North Dearborn Street, Chicago, Ill.

July 30, 1927.

Editor, Boston Medical and Surgical Journal:

In addition to the articles enumerated in our letter of June 25 the following have been accepted:

Lederle Antitoxin Laboratories

Erysipelas Streptococcus Antitoxin (Lederle)
Unconcentrated.

Yours truly,

W. A. PUCKNER, Secretary,
Council on Pharmacy and Chemistry.

CONNECTICUT DEPARTMENT OF HEALTH

MORBIDITY REPORT FOR THE WEEK ENDING
JULY 30, 1927

Diphtheria	23	Measles	10
Last week	16	Last week	21
Diphtheria bacilli carriers	2	Whooping cough	26
Typhoid fever	3	Last week	27
Last week	2	Bronchopneumonia	8
		Chickenpox	33

Influenza	3	Tuberculosis, pulmo-	
Mumps	6	nary	85
Pneumonia, lobar	5	Tuberculosis, other	
Poliomyelitis	1	forms	4
Tetanus	1	Gonorrhea	26
		Syphilis	37

NOTICES

UNITED STATES PUBLIC HEALTH SERVICE

CHRONOLOGICAL LIST OF CHANGES OF DUTIES AND STATIONS OF COMMISSIONED AND OTHER OFFICERS OF THE UNITED STATES PUBLIC HEALTH SERVICE

JULY 27, 1927

Surgeon L. L. Lumsden—Directed to proceed from Washington, D. C., to Little Rock, Ark., Jackson, Miss., and New Orleans, La., and such other places in these States as necessary to cooperate with State and local health authorities in the prevention of the interstate spread of smallpox and other epidemic diseases in the flooded area along the Mississippi River—July 16, 1927.

A. A. Surgeon W. I. Hinkle—Directed to proceed from Ellis Island, N. Y., to Philadelphia, Pa., for temporary duty at U. S. P. H. S. R. S. No. 305—July 16, 1927.

Assistant Surgeon General J. W. Kerr—Directed to proceed from Washington, D. C., to Chicago, Ill., to serve as chairman on board at M. H. No. 5, on August 8, 1927, to examine candidates to determine their eligibility for commission as assistant surgeon in the Regular Corps—July 20, 1927.

Surgeon G. W. McCoy—Directed to proceed from Washington, D. C., to Richmond, Va., and return, to investigate complications associated with vaccination against smallpox—July 20, 1927.

Surgeon French Simpson—Directed to proceed from Mobile, Ala., to New Orleans, La., to act as member of board at M. H. No. 14, on August 8, 1927, to examine candidates to determine their eligibility for commission as assistant surgeon in the Regular Corps—July 20, 1927.

Surgeon F. A. Carmella—Directed to proceed from Washington, D. C., to Norfolk, Va., and return, for purpose of inspecting the Shipping Board Tug Elk, to see if it is suitable for quarantine duty—July 21, 1927.

Assistant Surgeon General Thomas Parran, Jr.—Directed to proceed from Washington, D. C., to Boston, Mass., and such other places in the State of Massachusetts and return, on or about July 23, to cooperate with State Health Department in connection with venereal disease control—July 22, 1927.

A. A. Surgeon Purl E. Reed—Directed to proceed from Council Bluffs, Ia., to Pittsburgh, Pa., for duty with United States Bureau of Mines—July 22, 1927.

Assistant Surgeon General S. B. Grubbs—Directed to proceed from Washington, D. C., to make inspection of the immigration stations in Canada as far west as Michigan, and to proceed to Maine, Vermont, New York and Michigan, and Ottawa, Ont., for the purpose of conferring with the Canadian quarantine authorities, and to such other points on the St. Lawrence River as may seem advisable, and return, to observe the Canadian quarantine operations—July 22, 1927.

Surgeon H. E. Trimble—Directed, on departure of Surgeon J. S. Bogges, to assume charge of Marine Hospital No. 7, Detroit, Mich.—July 23, 1927.

Surgeon P. M. Stewart—Directed, on departure of Surgeon W. C. Billings, to assume charge of Marine Hospital No. 70, New York, N. Y.—July 23, 1927.

Surgeon Joseph Goldberger—Directed to proceed from Washington, D. C., to Memphis, Tenn., and to such other places in Tennessee, Mississippi, Arkan-

sas and Louisiana, and return, as may be necessary in connection with field investigations of pellagra—July 23, 1927.

Statistician Edgar Sydenstricker—Directed to proceed from Washington, D. C., to Memphis, Tenn., and to such other places in Tennessee, Mississippi, Arkansas and Louisiana and return, as may be necessary in connection with field investigations of pellagra—July 23, 1927.

Assistant Surgeon A. S. Irving—Relieved from duty at New Orleans, La., and assigned to duty at M. H. No. 70, New York, N. Y.—July 23, 1927.

Assistant Surgeon C. B. Stacy—Relieved from duty at New Orleans, La., and assigned to duty at Little Rock, Ark.—July 23, 1927.

Assistant Surgeon A. E. Russell—Relieved from duty at Johnstown, Pa., and assigned to duty at Washington, D. C., in the Office of Industrial Hygiene and Sanitation—July 25, 1927.

Chief Pharmacist B. E. Holsendorf—Directed to proceed from Rosebank, N. Y., to Chester, Pa., Camden, N. J., Newport News, Va., Quincy, Mass., and return, for the purpose of a conference relative to methods of ratproofing vessels under construction at these places—July 25, 1927.

Senior Surgeon John McMullen—Directed to proceed from New Orleans, La., to Washington, D. C., for conferences at the Bureau, concerning the prevention and suppression of epidemic diseases in the flooded area—July 25, 1927.

Surgeon Charles Armstrong—Directed to proceed from Washington, D. C., to Roanoke, Va., and Rocky-mount, Franklin County, Va., and return, for the purpose of conferring with State and local health authorities relative to a suspected case of typhus fever—July 26, 1927.

Senior Surgeon W. G. Stimpson—Directed to proceed from Philadelphia, Pa., to Washington, D. C., to act as chairman of board convened to examine candidates for promotion to permanent grade of senior surgeon on August 2, 1927—July 26, 1927.

Senior Surgeon C. H. Lavinder—Directed to proceed from New York, N. Y., to Washington, D. C., to act as member of board convened on August 2, 1927, to examine candidates for promotion to the permanent grade of senior surgeon—July 26, 1927.

Assistant Surgeon General S. B. Grubbs—Directed to report to board in Washington, D. C., on August 2, 1927, for examination to determine fitness for promotion to the grade of senior surgeon—July 26, 1927.

Surgeon M. H. Foster—Directed to proceed from Chicago, Ill., to Washington, D. C., and return, on August 2, 1927, for examination to determine fitness for promotion to grade of senior surgeon—July 26, 1927.

Chief Pharmacist F. L. Gibson—Directed to proceed from San Francisco, Calif., to Oakland, San Leandro, Orange Grove and Los Angeles, Calif., and return, and if necessary to points in vicinity of those cities to obtain custody of eight lepers and accompany them to M. H. No. 66, Carville, La.—July 27, 1927.

BOARDS CONVENED

The following boards convened to meet on August 8, 1927, at the following places to examine candidates to determine their eligibility for commission as assistant surgeon in the Regular Corps of the United States Public Health Service—July 20, 1927.

Washington, D. C.—Detail for the Board: Assistant Surgeon General A. M. Stimson, Surgeon J. P. Leake, Surgeon Lawrence Kolb.

San Francisco, Calif.—Detail for the Board: Senior Surgeon J. C. Perry, Surgeon R. H. Creel, Surgeon R. W. Hart.

Chicago, Ill.—Detail for the Board: Assistant Surgeon General J. W. Kerr, Surgeon M. H. Foster, Surgeon J. H. Linson.

New Orleans, La.—Detail for the Board: Senior Surgeon John McMullen, Surgeon Fiench Simpson, Surgeon D. C. Turnipseed.

Board of officers convened to meet at Philadelphia, Pa., at call of chairman, to reexamine alien—July 23, 1927. Detail for the Board: Surgeon H. M. Manning, A. A. Surgeon Leon Van Horn, A. A. Surgeon Horace Phillips.

Board of officers convened to meet at Washington, D. C., on August 2, 1927, to examine officers to determine fitness for promotion to the permanent grade of senior surgeon. Detail for the Board: Senior Surgeon W. G. Stimpson, Senior Surgeon C. H. Lavinder, Senior Surgeon John McMullen.

Official:

H. S. CUMMING, *Surgeon General.*

REMOVALS

DR. MAURICE FREMONT SMITH has moved from 99 Commonwealth Avenue to 6 Commonwealth Avenue.

DR. HENRY V. McLAUGHLIN has moved his office and residence to 126 Park Street, corner of Beacon Street, Brookline, Mass.

DR. FAITH L. MESERVE has moved to Weston, Mass. Her office is located at Trinity Court, Dartmouth Street, Boston.

DR. C. A. KIRKLAND has moved to 159 Fourth Avenue, Ville St. Pierre, Montreal, Canada.

REPORTS AND NOTICES OF MEETINGS

UNION HOSPITAL IN FALL RIVER

CLINICAL STAFF MEETING

THE regular monthly Clinical Staff meeting will be held at the Country Club on Thursday, August 25, 1927, at 5:30 P. M. Paper by Dr. George H. Kershaw of Fall River, Mass., Subject, "Carbon Dioxide Gas and Its Uses in Medicine." All physicians interested are cordially invited.

M. N. TENNIS, M.D., *Secretary.*

August 20, 1927

BOOK REVIEW

The Care of the Patient. By FRANCIS WELD PEABODY, M.D., Professor of Medicine, Harvard Medical School. Harvard University Press, Cambridge, Mass. 48 pages. Price \$1.00.

This essay, on which editorial comment was made in the JOURNAL of April 7, 1927, is deserving of republication in the attractive form which it here assumes. The insight and the philosophy underlying Dr. Peabody's "Care of the Patient" entitle this essay to a position of permanence in every physician's library.